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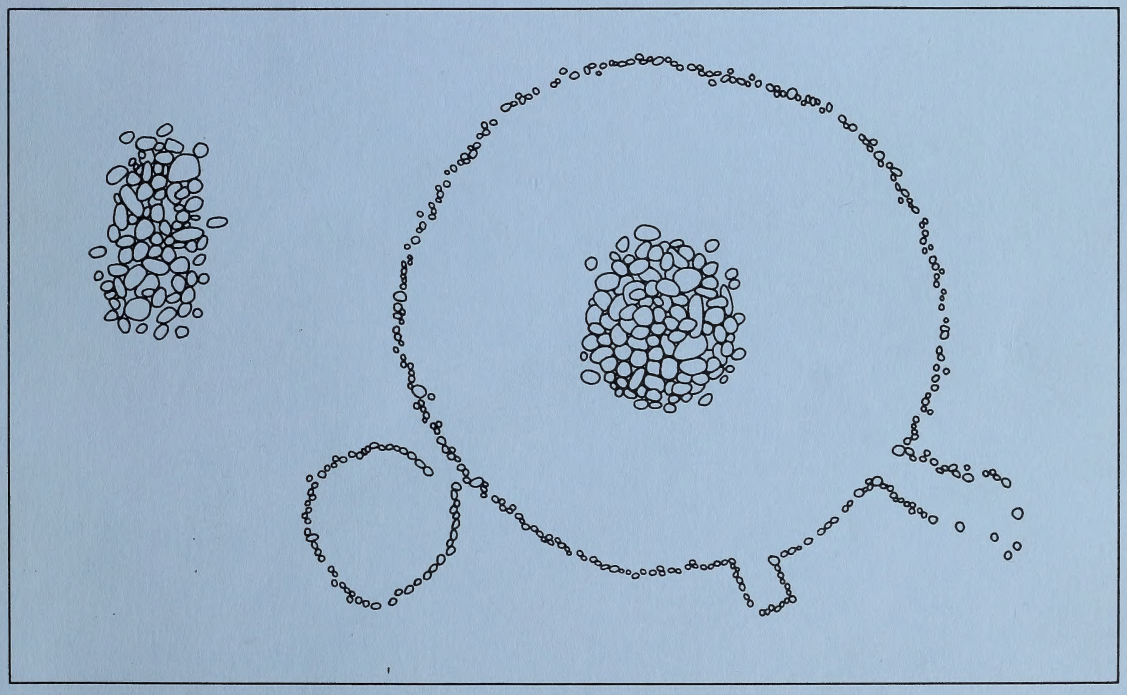
MEDICINE WHEELS ON THE NORTHERN PLAINS: A SUMMARY AND APPRAISAL

John H. Brumley



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MEDICINE WHEELS ON THE NORTHERN PLAINS: A SUMMARY AND APPRAISAL

By

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ABSTRACT

Medicine wheels are a rare and poorly understood aboriginal cultural feature found throughout the plains of Alberta, Saskatchewan, Montana and northern Wyoming. One of the most imposing and visually impressive of such features present in these regions, medicine wheels have generated considerable public interest. Available ethnohistoric and archaeological evidence suggests that medicine wheels served a variety of religious and ceremonial functions. At least some medicine wheels date back to ca. 5,500 years B.P. Structures referred to as medicine wheels reflect a diversity of form and size. Sixty-seven individual structures considered to be medicine wheels have been documented here.

Information regarding individual medicine wheels sites, and medicine wheels as a general category, has never been thoroughly summarized or synthesized. The following report suggests a general definition for medicine wheels; proposes a subdivision of the sample of 67 medicine wheels into eight defined subgroups; summarizes available ethnohistoric and archaeological data available for medicine wheels referrable to each subgroup; makes a number of observations regarding the ethnohistorical and archaeological record as it relates to medicine wheels; and makes recommendations concerning management of this class of cultural feature.

ACKNOWLEDGEMENTS

This report was originally written by John Brumley in 1986. Much of the data discussed herein was originally compiled under Brumley's supervision by Michael Quigg and Barry Dau and is presented elsewhere in an individual site inventory format (Dau 1986a; Quigg 1984). Funding for this project was provided under contract by Alberta Culture and Multiculturalism, Archaeological Survey of Alberta. J. Rod Vickers, Martin Magne and David Burley of the Archaeological Survey of Alberta provided invaluable encouragement, support and goading which led to the completion and publication of this report. Dr. R.G. Forbis reviewed an earlier version of the manuscript and made several valuable comments which I have drawn upon here.

Line drawings presented here were largely copied from credited sources and reformatted by Anna Brumley and Wendy Johnson. Janice Andreas drafted Figure 2. Barry Dau printed the photograph prints. Donna Thane and Anna Brumley typed and edited the original report. Martina Purdon edited this version of the manuscript, adding considerably to its readability and appearance.

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INTRODUCTION

The term "medicine wheel" has been used since the late nineteenth century to describe a wide variety of aboriginal surface stone structures found on the northern Plains. An examination of the anthropological and archaeological literature suggests that the term was first coined in reference to the Bighorn medicine wheel, located atop Medicine Mountain near Sheridan, Wyoming (Grinnell 1922; Simms 1903).

As archaeological research advanced on the northern Plains, other structures, also characterized by a variety of stone circle, spoke and cairn configurations, were encountered. The only vaguely similar documented structure was the Bighorn medicine wheel. As a result, the term "medicine wheel" became a generic category encompassing a variety of structures throughout the northern Plains.

The term medicine wheel is fine as a convenient label for a diverse class of cultural remains which share a few similar attributes of form and possibly reflect non-utilitarian roles. However, a review of the literature on medicine wheels indicates that many researchers have attempted to compare and relate various diverse structures simply because they fall into the general class of medicine wheels. The result has been to create an extremely muddled picture of just what medicine wheels are and what we know about them. In the following report, I have drawn together and summarized available information on individual medicine wheel sites in the northern Plains. I have suggested a general definition for medicine wheels and a series of structurally defined subgroups for medicine wheels. Finally, I have summarized available empirical information for each defined medicine wheel subgroup and discussed what is generally known about medicine wheels.

DEFINITION

Various researchers have presented definitions for the term medicine wheel intended to differentiate them from the wide variety of

other surface stone features (such as effigies, tipi rings, stone cairns and stone alignments) present on the Plains.

> A medicine wheel may be defined for our purpose as a cairn or circle of stone [occasionally concentric circles] from the center of which radiate a series of rows of other stones (Kehoe 1954:133).
>
> Medicine wheels . . . consist of a central circle or cairn from which lines of stones radiate outward, sometimes to an enclosing circle (Wedel 1961:266).
>
> Typically, medicine wheels are circles of stones from which several spokes of stones radiate. . . . The stone circles are generally larger than tipi rings but seldom exceed 30 feet in diameter. Near the center, there may be a small circle, possibly representing a fireplace. The length of the spokes is usually approximately the same as the diameter of the stone circle. Medicine wheels of historic times characteristically have four spokes; older prehistoric examples often have five, sometimes more (Forbis 1970:27).
>
> The term "medicine wheel" has been used broadly in the literature to refer to virtually any circle of rock [exclusive of tipi rings] with or without associated cairns and spokes, and has occasionally been used to designate spokes lacking circles or cairns. For the purpose of this thesis, the vast array of isolated effigies, stylized rock alignments, small isolated cairns and small Blackfoot mortuary tipi rings [Kehoe 1954] must be excluded from the concept, even though some may in some way be related to the larger, more elaborate features.
>
> Included in the term "medicine wheel" are various combinations of large circles or concentric circles of stone, large cairns and lines of rock [spokes] of various and irregular lengths and number. Medicine wheels, then, may consist of circles and/or spokes, either or both of which are in combination with a cairn. Such features are usually located in prominent topographic positions, but they may be found in a variety of locales (Calder 1977:200).

The problem with these definitions is that each excludes a number of features which the majority of reseachers would "plug into" the generic medicine wheel category. A review of the available data on medicine wheels suggests that the following characteristics could be used to formulate a definition:

(1) Medicine wheels are largely constructed of unmodified natural stone, possibly with of some earth intentionally incorporated into the construction of prominent central cairns.

(2) All medicine wheels consist of a combination of at least two of the following three primary components:
    (a) a prominent, centrally located stone cairn of varying size;
    (b) one or more concentric stone rings of generally circular shape; and/or
    (c) two or more stone lines radiating outward from a central origin point, central cairn or the margins of a stone ring.
(3) Medicine wheels are made up of a generalized and radially symmetrical arrangement of the above primary components.

In addition, the majority of medicine wheels have a number of stone structures - referred to here as ancillary features - incorporated within or at least spacially associated with them. These include simple stone circles (such as hearths and tipi rings), anthropomorphic figures and secondary cairns. A search of the extant published and unpublished literature indicates that all structures which the majority of researchers would consider "medicine wheels" are accommodated by this definition. Sixty-seven such structures are known to be present on the northern Plains (Figure 1). Basic locational and descriptive data on these structures have been completed under the writer's supervision and are presented elsewhere (Dau 1986a; Quigg 1984). Several additional structures referred to by others as medicine wheels are not included here, either because inadequate information is available for proper identification or because the information suggests that the structures fail to meet the criteria specified above.

MEDICINE WHEEL SUBGROUPS

An examination of the 67 structures considered here to represent medicine wheels indicates that they reflect a broad diversity of form. However, based on the criteria defined here, many of the individual features composing these structures can be regarded as ancillary to the primary and basic forms which repeat themselves from site to site. In developing the defined subgroups, the writer has attempted to "pull out" these basic forms and use them as a basis for ordering the structures. It remains to be seen whether further research will indicate that all, or even some, of the subgroups defined here are

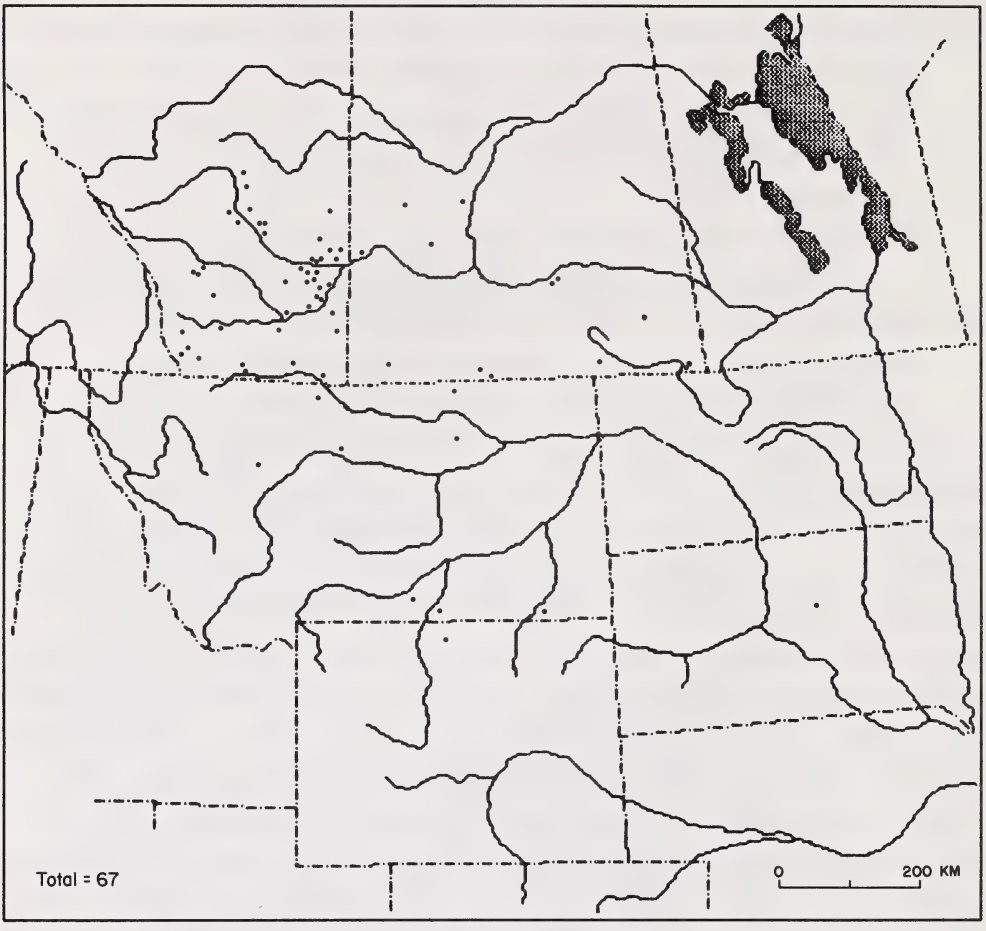


Figure 1. Distribution of known medicine wheels in the northern Plains.

culturally significant categories or whether they will require further subdivision. The subgroups defined here, however, hopefully provide a logical starting point to begin a more meaningful examination of the diversity exhibited by medicine wheels.

It must be remembered that all medicine wheels are composite structures, each consisting of two or more components. To date, the limited excavation conducted at medicine wheel sites suggests that many are accretional in nature, that is, constructed over a long period of time with various components added on gradually. Since limited excavation data are available for most sites, the current configuration of these structures is used in grouping them into defined subgroups.

Eight subgroups are suggested here to divide the generic category of medicine wheels (Figure 2).

Subgroup 1: Features characterized by a prominent stone cairn surrounded by a stone ring

Subgroup 2: Features characterized by a central stone cairn surrounded by a stone ring. Extending outward from the ring are two parallel or diverging stone lines which form a passageway oriented towards the center of the structure. The stone lines usually terminate at the ring wall but rarely may extend a short distance into it.

Subgroup 3: Features characterized by a prominent central cairn from which two or more stone lines extend in various directions

Subgroup 4: A stone ring which has two or more stone lines extending outward from its margins

Subgroup 5: A stone ring which is dissected into segments by four or more interior stone lines radiating outward from a central origin point. No prominent central stone cairn is present.

Subgroup 6: A prominent central stone cairn surrounded by a stone ring. Two or more interior stone lines connect the stone ring to the cairn.

Subgroup 7: Features characterized by a prominent central stone cairn surrounded by a stone ring. Two or more stone lines extend outward from the margins of the stone ring.

Subgroup 8: Features characterized by a prominent central stone cairn surrounded by a stone ring. Two or more stone lines extend outward from the cairn and pass through the ring wall before terminating.

The following sections summarize available information on the structures comprising each subgroup. Each summary addresses the following areas:

(1) variability in structural size and form;
(2) geographic distribution;
(3) ethnographic evidence relating to their construction and use;
(4) the findings of archaeological and other scientific research into such structures; and
(5) their current condition.

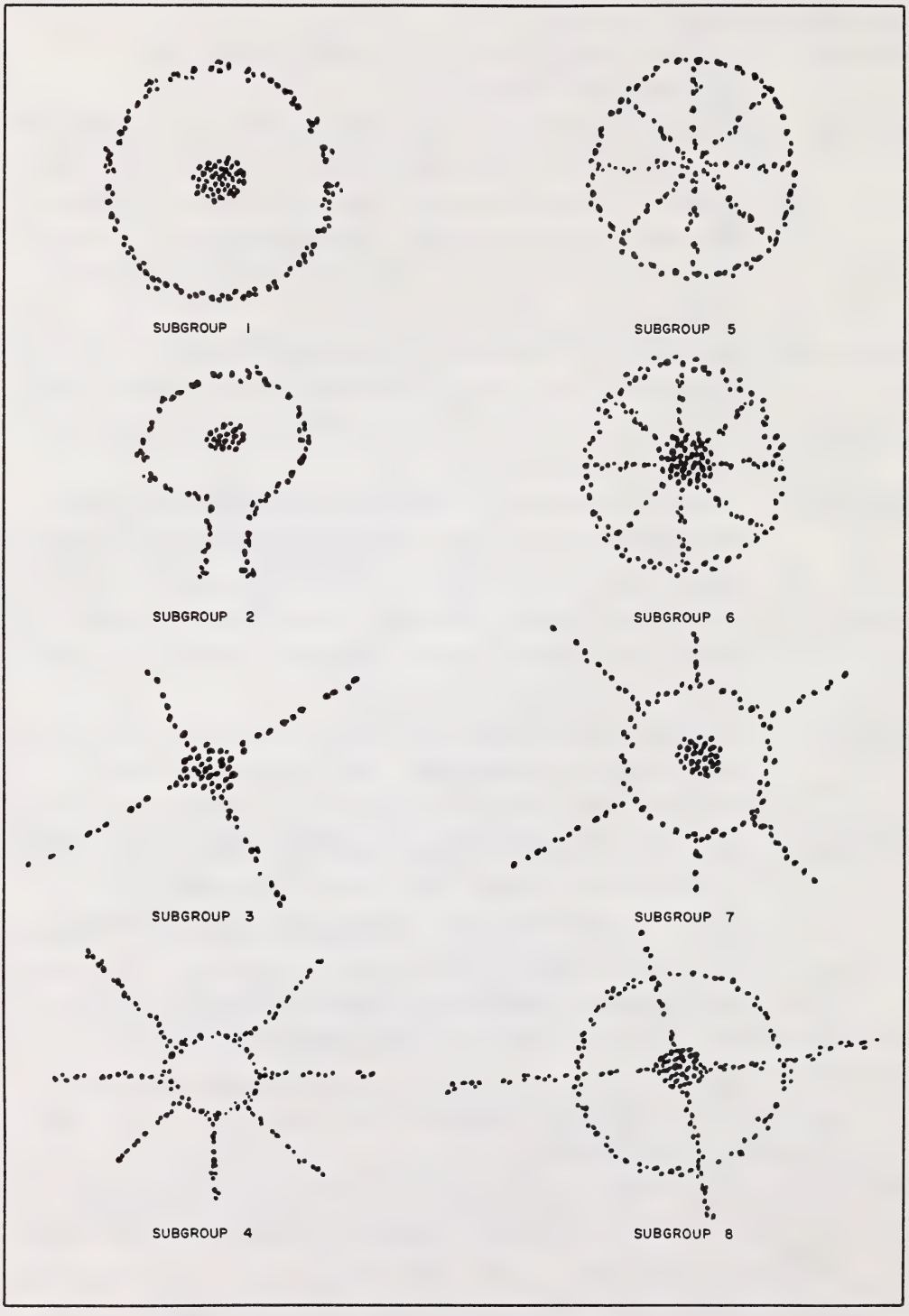


Figure 2. Defined medicine wheel subgroups.

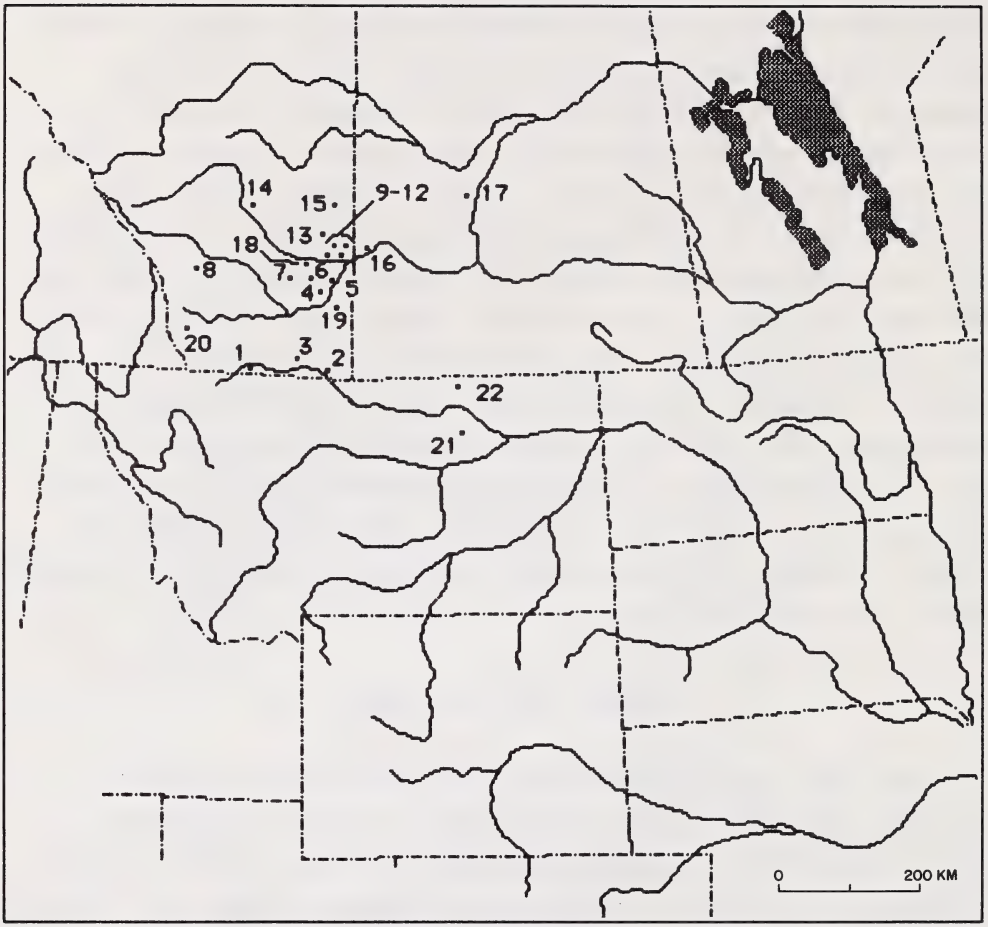
Included tables attempt to summarize basic locational and descriptive data on the sample of medicine wheels described. A word of caution regarding the data provided in these tables and discussed herein are in order. Many medicine wheel structures have been documented to only a limited extent. Alternately, in dealing with the few extensively documented sites, such as the Bighorn wheel, one encounters confusing and often conflicting sets of data. Measurements are also crude. Many are derived from site forms where the values may have been "paced out" by the recorder. Other measurements are derived from feature maps of quite large structures reduced down to single page formats. Diameters of obviously ovoid-shaped stone circles were often derived here from drawings calculating dimensions along two or more axes and averaging them. The foregoing statements are not intended as an apology but as a warning to the reader. This paper represents an attempt to compile and organize this disjointed, scattered and, in many cases, inadequate data base.

SUBGROUP 1 MEDICINE WHEELS

Subgroup 1 medicine wheels are structures characterized by a prominent central stone cairn surrounded by a stone ring. Twenty-two (33%) of the 67 medicine wheel structures fall into Subgroup 1 (Table 2), making it the largest of the defined subgroup categories. Eighteen of the Subgroup 1 features are located in the Plains of southern Alberta (see Figure 3). The Tipperary Creek medicine wheel (Figure 4) is located in south central Saskatchewan near the outskirts of the city of Saskatoon. Further south, 24PH1102 (Figure 5) and the Orahood (Figure 6) wheels are within the Milk River drainage of northeastern Montana.

PHYSIOGRAPHIC AND TOPOGRAPHIC SETTING

Subgroup 1 structures are located predominately in two physiographic settings. They are found most frequently at the summit of high hills or ridges away from major river, stream or coulee valleys (n=13), and they are found on prairie surfaces which border major river



1 - DgPa-1
2 - DgOo-1 Manyberries
3 - DhOs-1 Faith
4 - EcOp-51 Twin Peaks
5 - EdOm-2
6 - EdOp-1 British Block
7 - EdOq-30 M40
8 - EdPg-1 Buffalo Hill
9 - EfOo-10 Miner No. 2
10 - EfOq-65 Anderson No. 2
11 - EfOo-24 Miner No. 3
12 - EfOq-87 Ross
13 - EhOp-1 Buffalo Bird
14 - EkPf-1 Rumsey
15 - FbOr-48
16 - EfOl-2 Roy Rivers
17 - FbNp-2 Tipperary Creek
18 - EdOo-39 Lone Antelope
19 - EaOn-3 Loose Wheel
20 - DjPi-1 Jim Allen
21 - 24PHl118 Orahood
22 - 24PHl102

Figure 3. Distribution of Subgroup 1 medicine wheels.

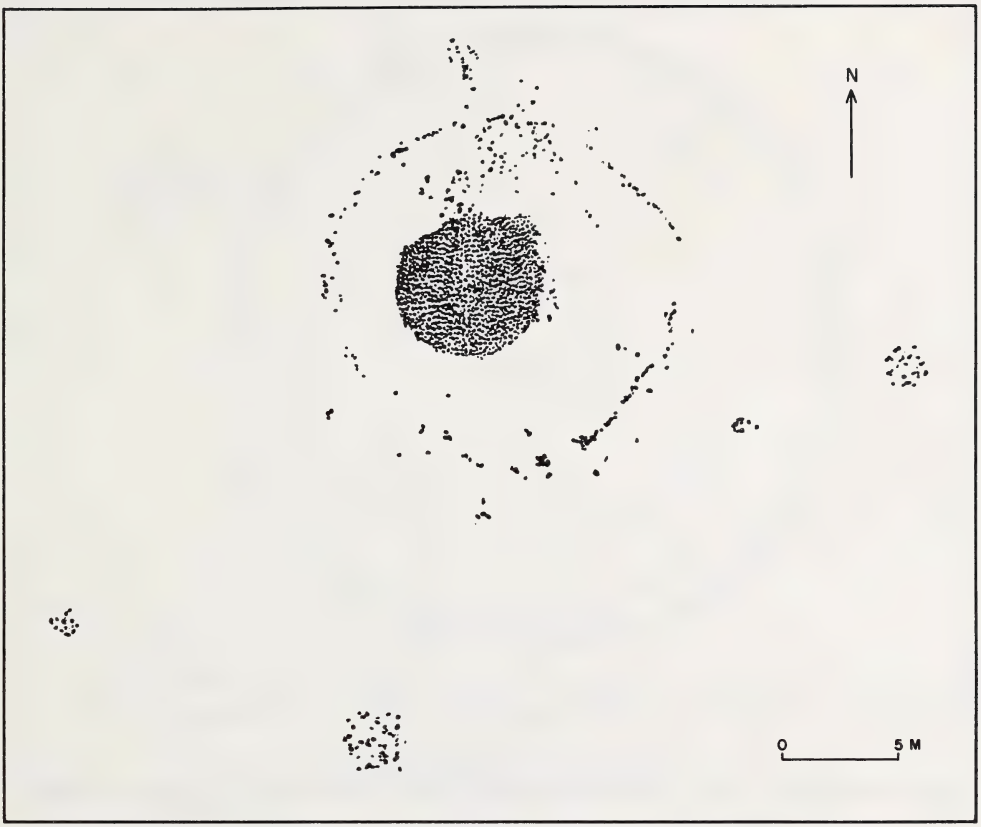


Figure 4. Map of FbNp-2, Tipperary Creek medicine wheel, Subgroup 1 (from Kehoe and Kehoe 1979:25).

valley margins (n=7). Single occurrences were noted on open prairie surfaces along a stream valley edge and along a coulee edge. Topographic relief, expressed by the number of 25-foot contour lines present within a 0.5 km radius of the site margins, is greater than for any other subgroup. It ranges from three to eight contour lines per site (n=17), with an average of 6.8 lines.

METRIC AND NON-METRIC CHARACTERISTICS

Metric data regarding the size of the central cairns and surrounding stone ring are limited (Table 3). Cairn heights (n=6) range from 0.5 to 2.5 m, with a mean of 1.4 m. Cairn diameters (n=18)

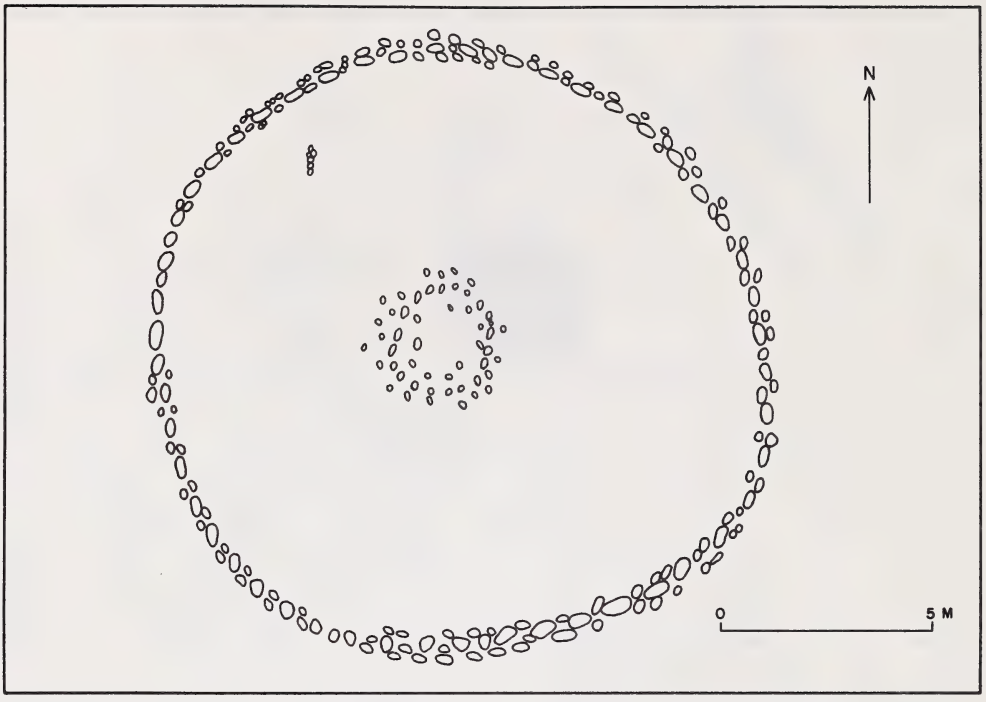


Figure 5. Sketch map of medicine wheel 24PH1102, Subgroup 1.

range from 2 to 12 m, with a mean of 5.3 m. Surrounding stone rings (n=17) range from 8 to 40 m in diameter, with a mean of 18.2 m.

ANCILLARY FEATURES

For the purpose of discussion, two types of ancillary structures are defined - those incorporated into or located within the stone ring of the medicine wheel and those located outside the stone ring. Fourteen Subgroup 1 structures contain no ancillary features within the wheel. The most common ancillary features present at the others were small stone cairns. One and five of these were noted within the stone rings at two sites, DgPa-1 and EkPf-1, respectively. From one to 18 small stone cairns were noted outside the stone rings at six sites (EdOm-2, EdOo-39, EdOp-1, EdOq-30, FbNp-2 and 24PH1102). One or two small cairns were noted both inside and outside the stone rings at two sites (EcOp-51 and EfOo-10). Single anthropomorphic stone effigies were noted at three sites, inside the stone ring at EdOp-1 and EfOq-87

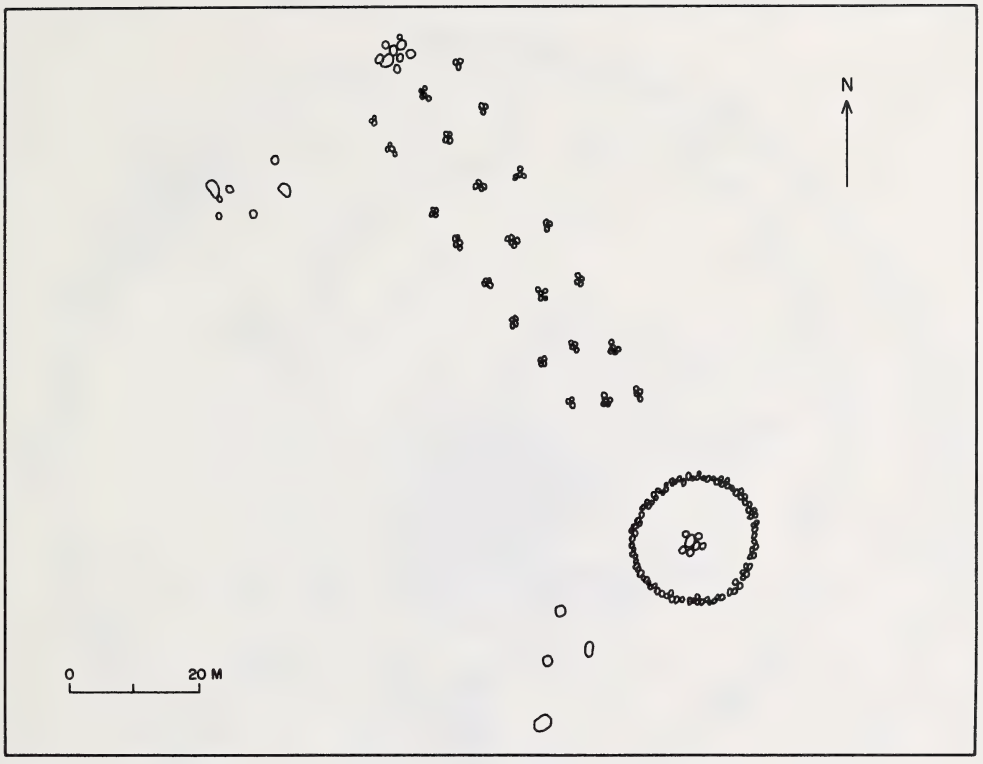


Figure 6. Sketch map of 24PH1118, the Orahood medicine wheel, Subgroup 1.

and outside at EkPf-1. A single earth depression inside the stone ring and a single earth depression outside the stone ring were also noted at EkPf-1. Small stone circles or tipi rings were noted near the medicine wheels at nine of the 16 sites where such observations were made (DhOs-1, EdOm-2, EdOo-39, EdOp-1, EdPg-1, EfOo-24, EfOq-65, EkPf-1 and 24PH1102).

At the Anderson No. 2 medicine wheel (Figure 7), 11 stone lines, up to 3.5 m in length, extend outward from the surrounding ring wall. One could reasonably argue that these lines are stone spokes, warranting classification of the Anderson No. 2 wheel as a Subgroup 7 structure. However, it is felt that, because of their short length and general appearance, they are ancillary to the structure and not primary components.

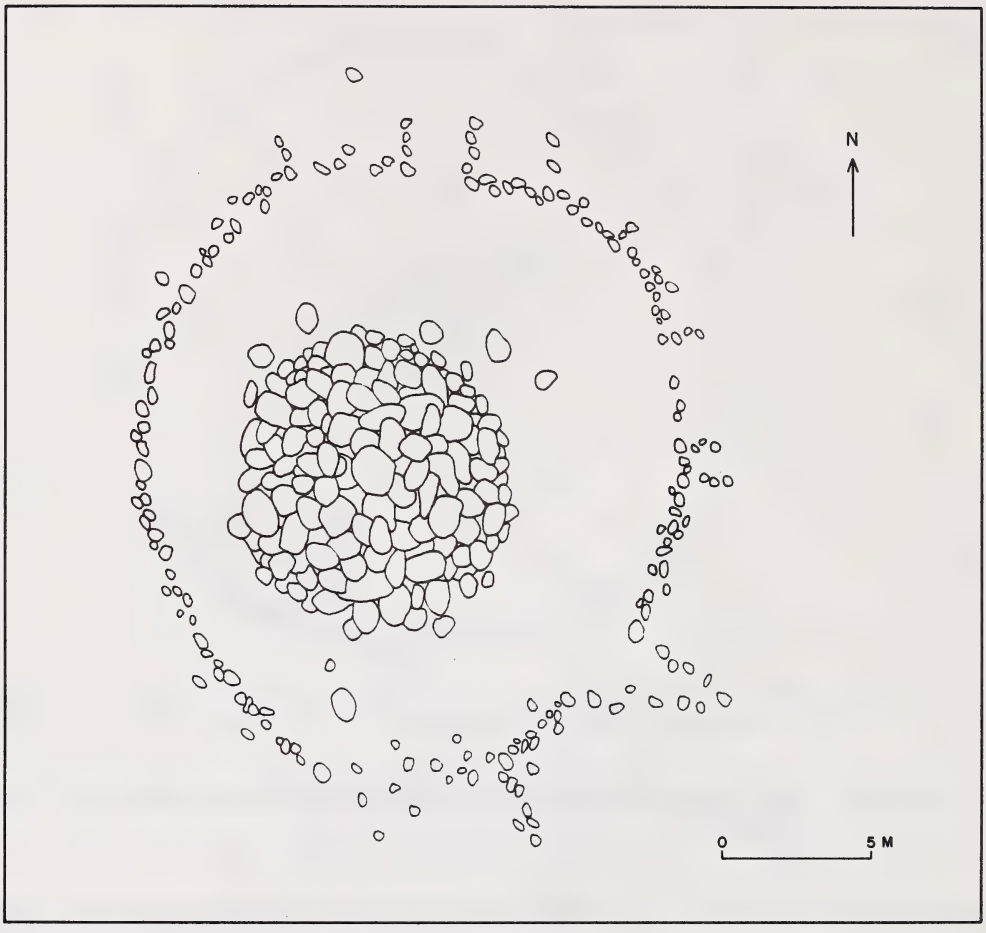


Figure 7. Detailed map of Anderson No. 2, Subgroup 1 medicine wheel (from Walde 1976).

At the Roy Rivers site (Figure 8), two parallel stone lines, approximately 1 m apart, connect the surrounding stone ring with the central stone cairn. These lines are similar to those characterizing Subgroup 2. Fifteen small cairns and a possible effigy surround the central cairn.

At the Orahood site, three parallel, closely spaced alignments are situated northwest of the medicine wheel. Each of these alignments is composed of a series of individual small cairns.

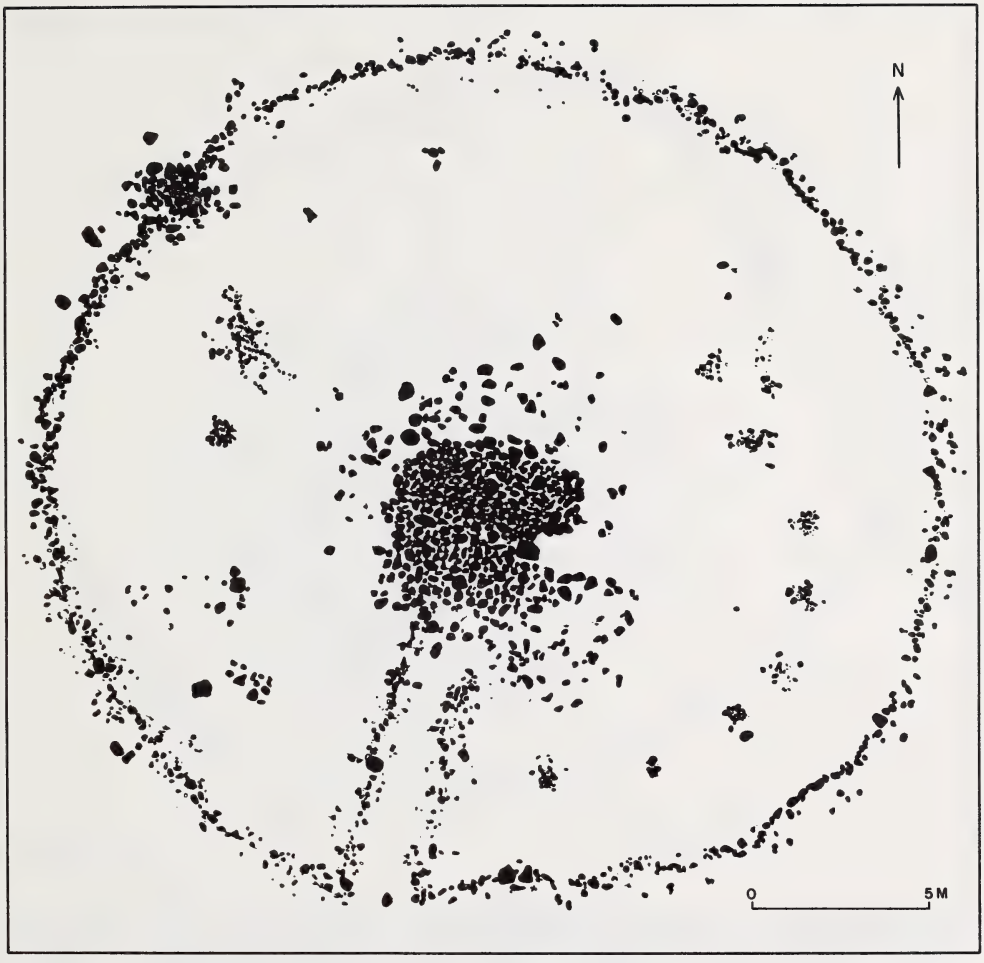


Figure 8. Map of Roy Rivers medicine wheel, Subgroup 1 (from Kehoe and Kehoe 1979:16).

FEATURE CONDITION AND RESEARCH STATUS

Of the 22 structures comprising Subgroup 1, available data indicate that 13 have been damaged to varying extents by vandalism, and one has been completely destroyed during the course of oil well site development. The remaining seven structures are apparently undisturbed.

No maps of any sort are available for eight structures, but detailed maps or sketch maps are available for the remaining wheels (see Figures 4 to 11 and 13 to 18). Five of the structures have been

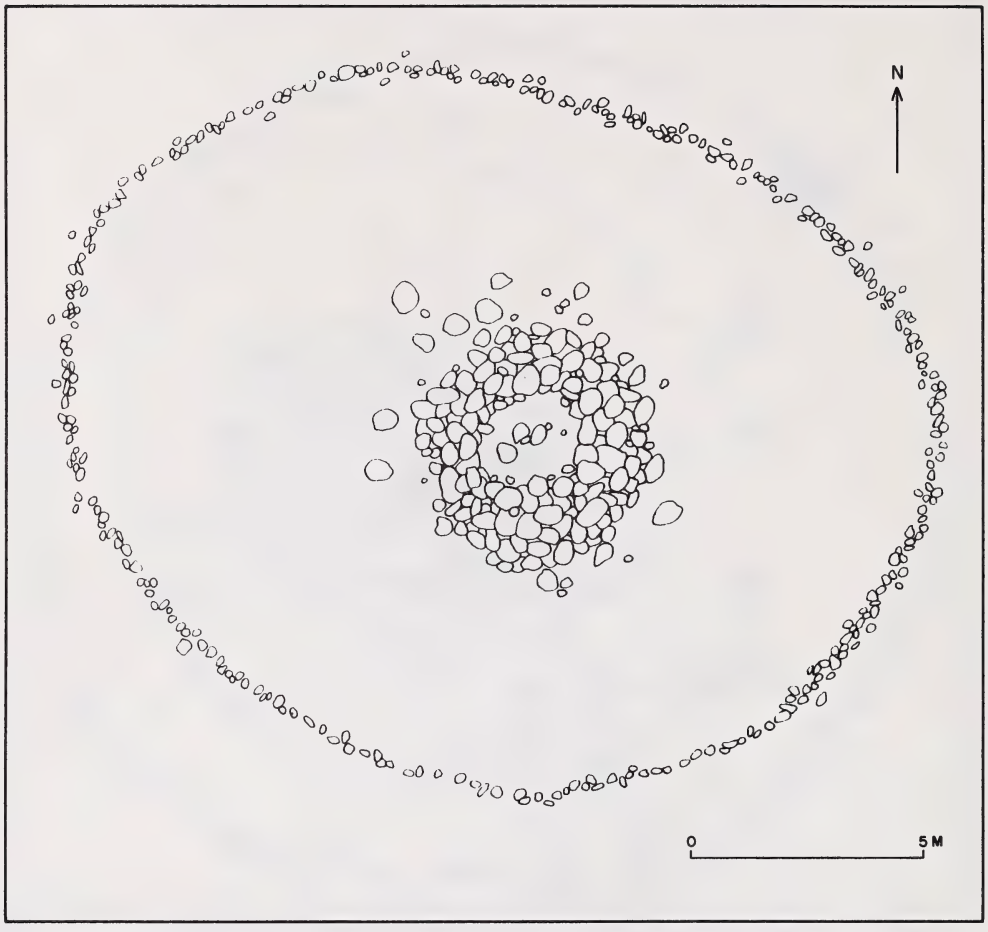


Figure 9. Plan map of EfOo-24, Miner No. 3, Subgroup 1 medicine wheel (from Walde 1976).

excavated to varying extents, but the results of this work have never been published in detail.

EVIDENCE RELATING TO CONSTRUCTION AND USE

Ethnographic Evidence

No direct ethnographic references or accounts relating to Subgroup 1 structures are known. However, anthropomorphic effigies of stone have been noted in association with three medicine wheel sites. Kehoe and Kehoe (1959) document the presence of similar anthropomorphic figures at a number of sites in the northern Plains and provide

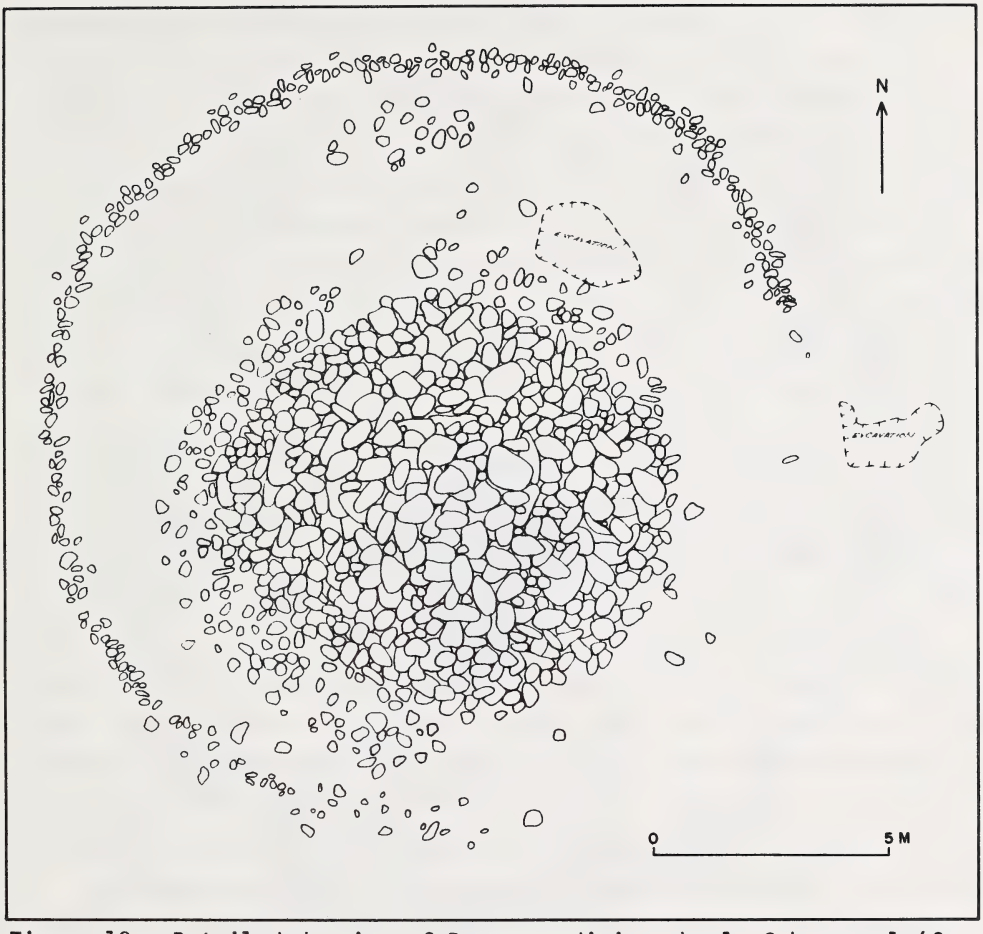


Figure 10. Detailed drawing of Rumsey medicine wheel, Subgroup 1 (from Walde 1976).

historic and ethnographic accounts regarding their function. Their research indicates that "several tribes of the Northern Plains - the North Blackfoot, Dakota, Sioux, Mandan (-Hidatsa?) and Crow - constructed monuments to memorable events, using simple outline effigy figures and/or cairns . . ." (Kehoe and Kehoe 1959:123).

Archaeological Evidence

The Rumsey medicine wheel (Figure 10) is one of the Subgroup 1 medicine wheels associated with an anthropomorphic effigy. The central cairn at Rumsey, although vandalized, apparently served as a burial site, as evidenced by human remains found there (Forbis 1970:30).

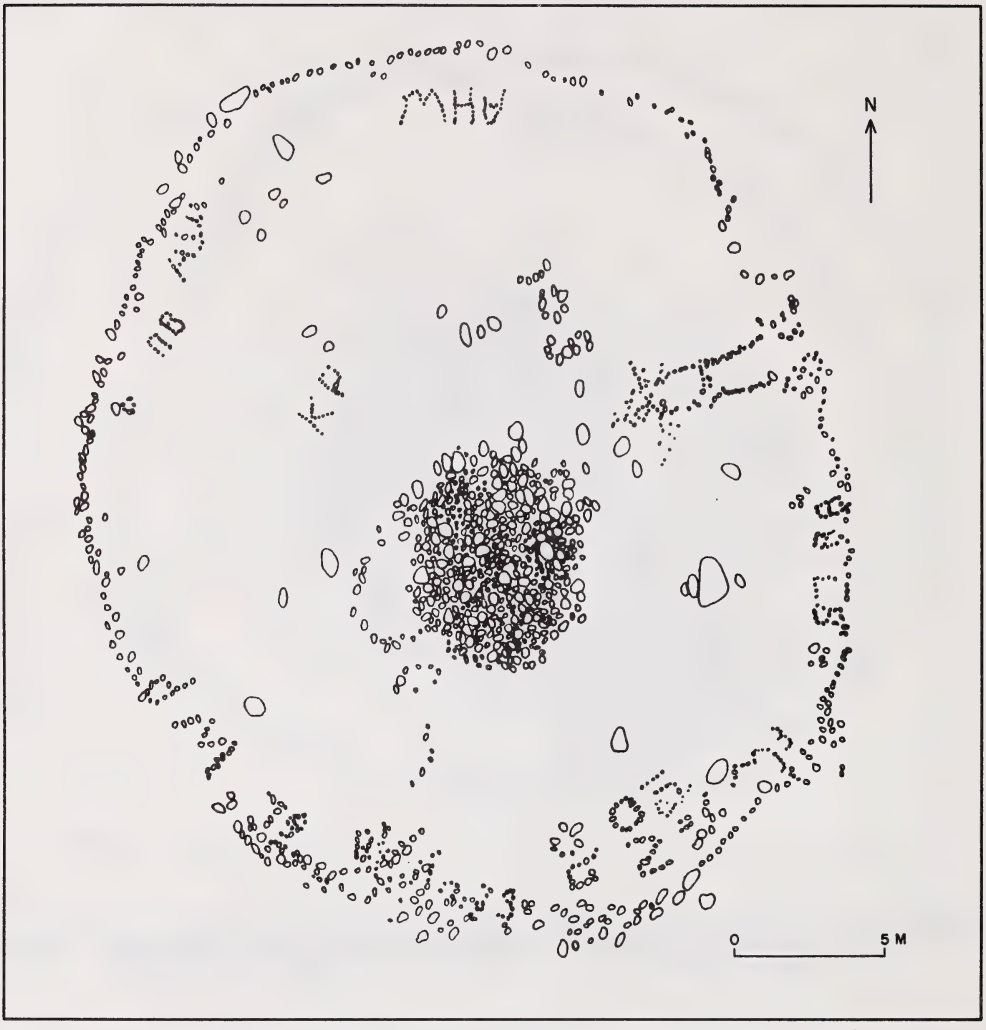


Figure 11. Plan map of EdOp-1, British Block, Subgroup 1 medicine wheel (from Walde 1976).

At Rumsey,

> . . . a Glenbow Foundation crew attempted to salvage what remained of a vandalized [central] cairn, there was the barest suggestion of an ochre-stained band of earth well above the original ground surface. The earth between may have been deposited either by man or nature before the ochre was applied (Forbis 1970:30).

A second Subgroup 1 medicine wheel associated with an anthropomorphic figure is the British Block (Figure 11). Half of this

structure was also excavated by a Glenbow Foundation crew. No human skeletal material was observed at the British Block, nor was a pit found beneath the cairn. Projectile points and other recovered artifacts did not appear to be stratigraphically segregated within the cairn. Oxbow points were the earliest forms present (Forbis 1970:30). A major tipi ring campsite, consisting of at least 51 tipi ring-size stone circles, is associated with the British Block medicine wheel (see Figure 12). Nineteen of these circles form a cluster clearly arranged into a camp circle (Brumley 1973; Finnigan 1982:115). Such camp circles were employed at various times by almost all Plains groups.

> The circle, with opening toward the rising sun, was the formation employed when the whole tribe was together. When bands were separated from the main group they might or might not camp this way, depending somewhat on the length of time they expected to remain in one spot, and on the nature of the terrain (Flannery 1953:28).

The camp circle at the British Block opens to the north. The remaining tipi rings are grouped into six separate clusters of two to seven rings. Based on diagnostic points and radiocarbon dates, Finnigan (1982:271) suggests that the cluster of tipi rings forming the camp circle are referrable to the McKean complex. He suggests both Middle and Late Prehistoric ages for the other tipi clusters at the site.

Another partially excavated but undocumented Subgroup 1 medicine wheel is Twin Peaks, located a short distance south of the British Block. At Twin Peaks, the south half of the central cairn was excavated. A small pit located beneath and near the margins of the cairn yielded a limited number of human skeletal elements. This pit and material may reflect an intrusive secondary burial. Both Middle and Late Prehistoric projectile point forms were recovered within and adjacent to the cairn. Several square metres were excavated between the central cairn and the surrounding stone circle. A considerable quantity of cultural material, dominated by debitage of local Swan River Chert, was found in this area.

Half of the Manyberries medicine wheel (DgOo-1; Figures 18 and 19) was also excavated by a Glenbow Foundation field crew in 1965. The cairn differed from other excavated Subgroup 1 structures in having a central earth core covered by an outer covering of cobbles. Recovered

Figure 12. Aerial view of EdOp-1, British Block, Subgroup 1 medicine wheel.

artifacts were concentrated in the soil between stones comprising the outer cobble cover. The central earth core was nearly sterile. A secondary human burial consisting of limited skeletal elements was recovered from the cairn. The burial appeared to be intrusive in nature and was in a small pit apparently dug into the side of the cairn after initial construction. Diagnostic cultural materials are representative of material dating from the Oxbow Complex to historic times. However, projectile points forms were dominated by styles attributable to the Avonlea and Old Women's phases (Carter 1967; Freiberg 1974).

At the Roy Rivers medicine wheel, an astronomical alignment between the central cairn and a ancillary feature within the surrounding ring has been suggested by Kehoe and Kehoe (1979; see Figure 8).

> The shape of the Roy Rivers "Wheel" is a circle broken on the south by an opening from which a parallel pair of lines of stones leads in to a large central cairn. On the northwestern portion of the circle is a smaller but prominent

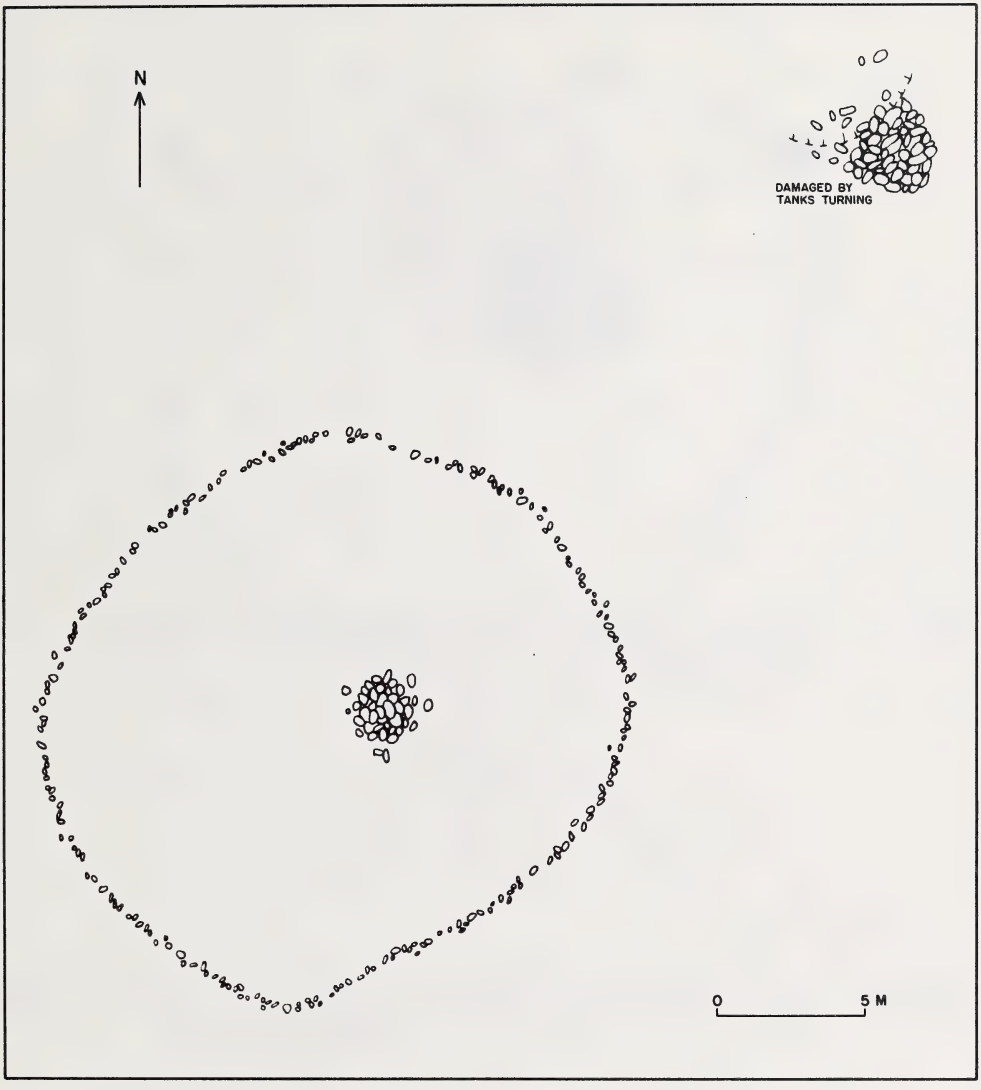


Figure 13. Detail of Byrne's M40 medicine wheel, Subgroup 1 (from Walde 1976).

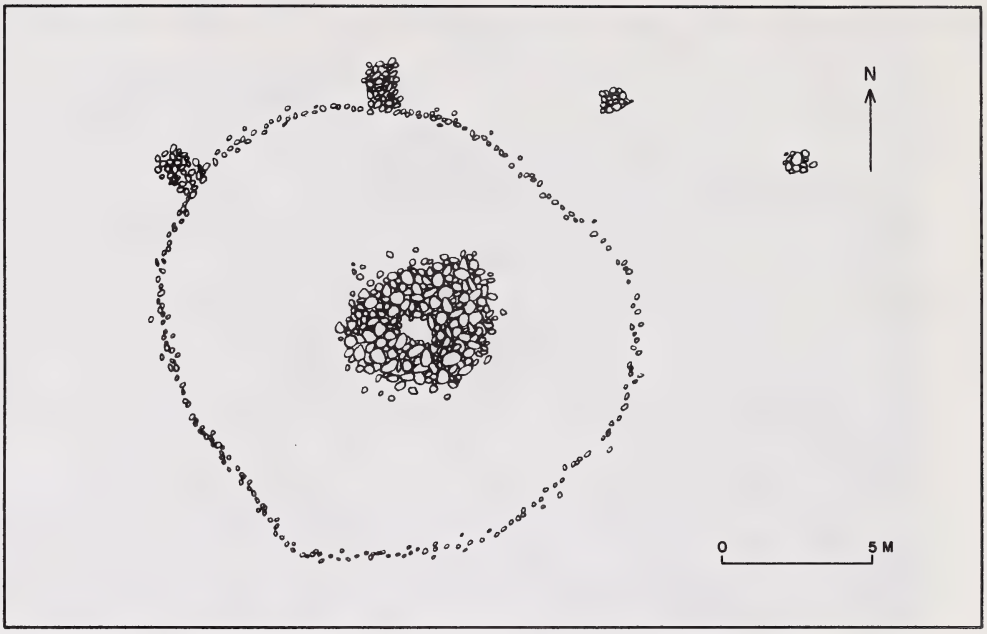


Figure 14. Detailed map of Miner No. 2 medicine wheel, Subgroup 1 (from Walde 1976).

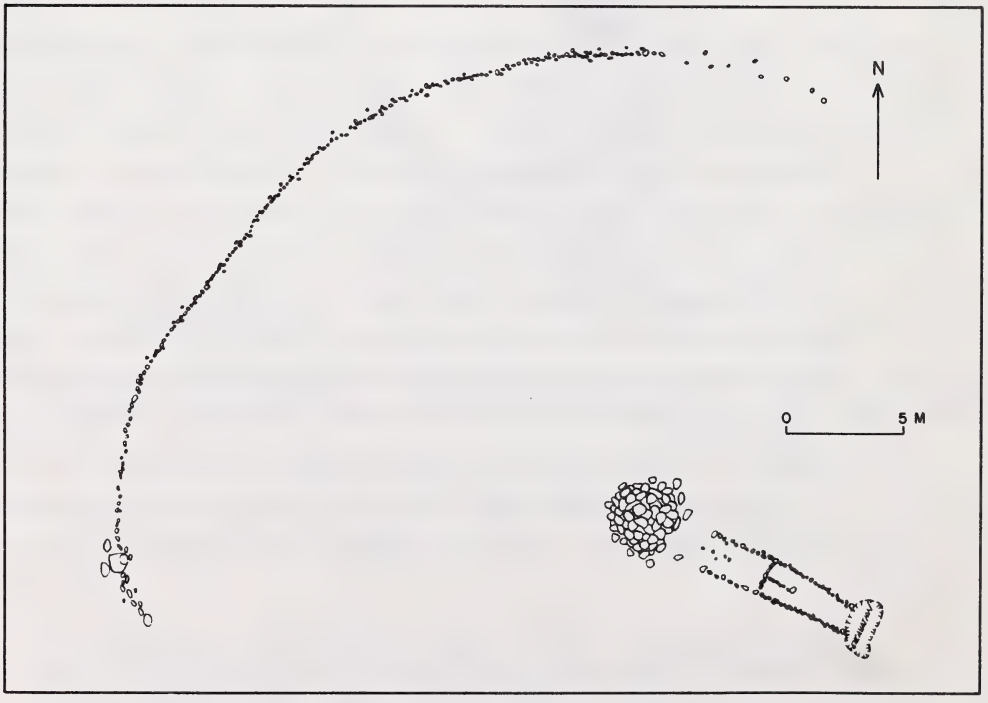


Figure 15. Detailed map of Ross medicine wheel, Subgroup 1 (from Walde 1976).

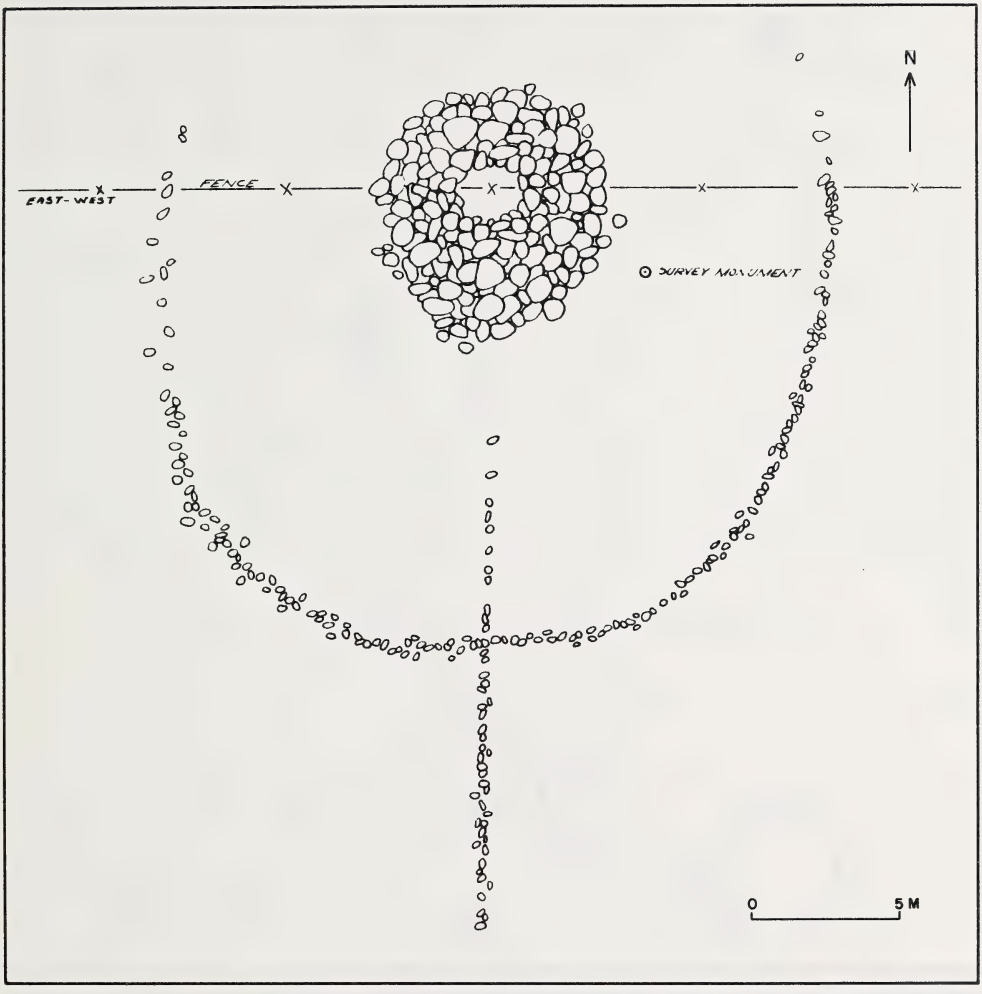


Figure 16. Detailed drawing of Buffalo Bird medicine wheel, Subgroup 1 (from Walde 1976).

cairn of stones, and within the circle fifteen still smaller cairns, each about three feet in diameter and half-a-foot high, incompletely surround the central cairn. Also within the circle, like the small cairns approximately midway between the central cairn and the peripheral circle, is a figure constructed of stones half-a-foot or smaller in diameter. This figure was assumed when mapped some years ago to represent a man, but closer examination in 1975 suggests it may be a "sunburst" with one radiating line disturbed from position. If it is a "sunburst", it is, at eleven and one-half feet long, larger than the "sunbursts" at Moose Mountain and the Minton Turtle. The possibility that the Roy Rivers figure is a "sunburst" is raised particularly by the

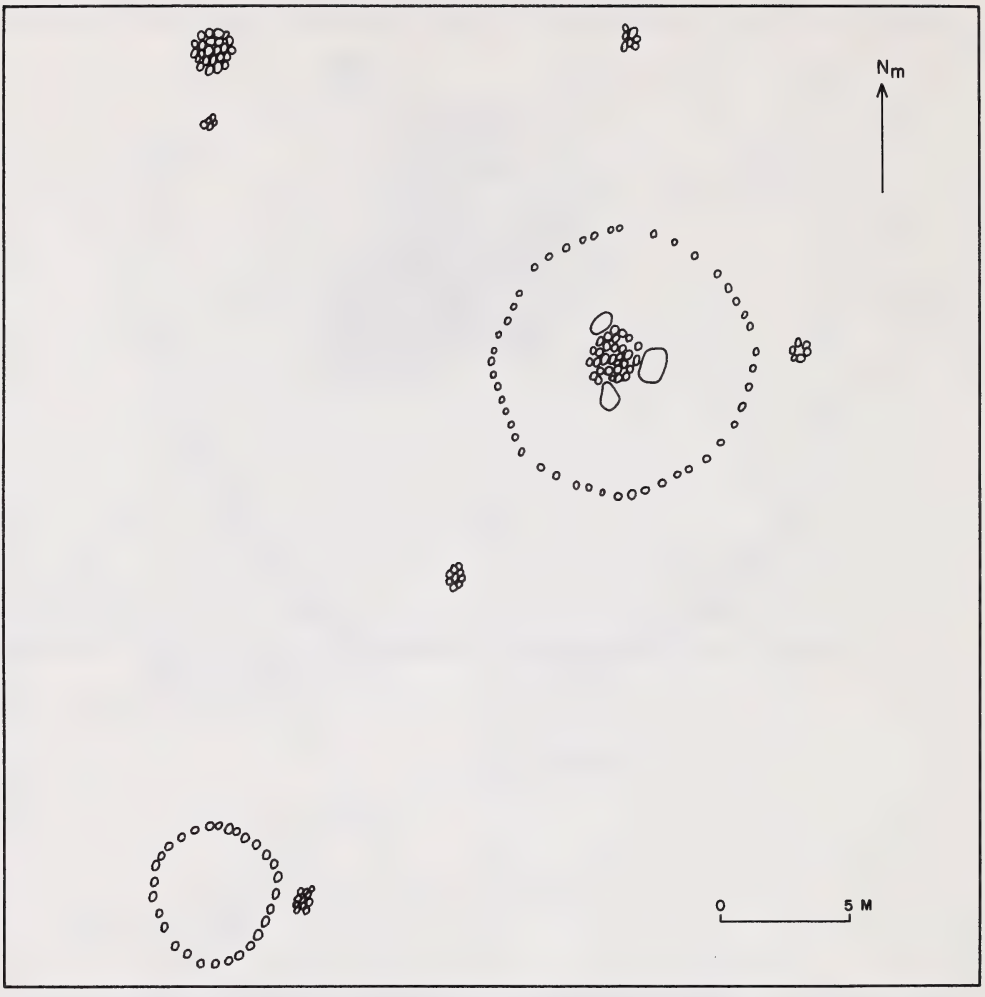


Figure 17. Sketch map of EdOo-39, Lone Antelope medicine wheel, Subgroup 1.

> fact that, as calculated and also observed on June 24, 1975, the sun at summer solstice sets directly over this figure for an observer stationed on the central cairn. No other solar or stellar alignments are apparent at this site (Kehoe and Kehoe 1979:15).

The Kehoes also mention the presence of "sunburst" effigies at two other possibly astronomically aligned structures: the Moose Mountain Wheel (Subgroup 8) and a structure not considered here to be a medicine wheel, the Minton Turtle effigy and cairn (Kehoe and Kehoe 1979:15).

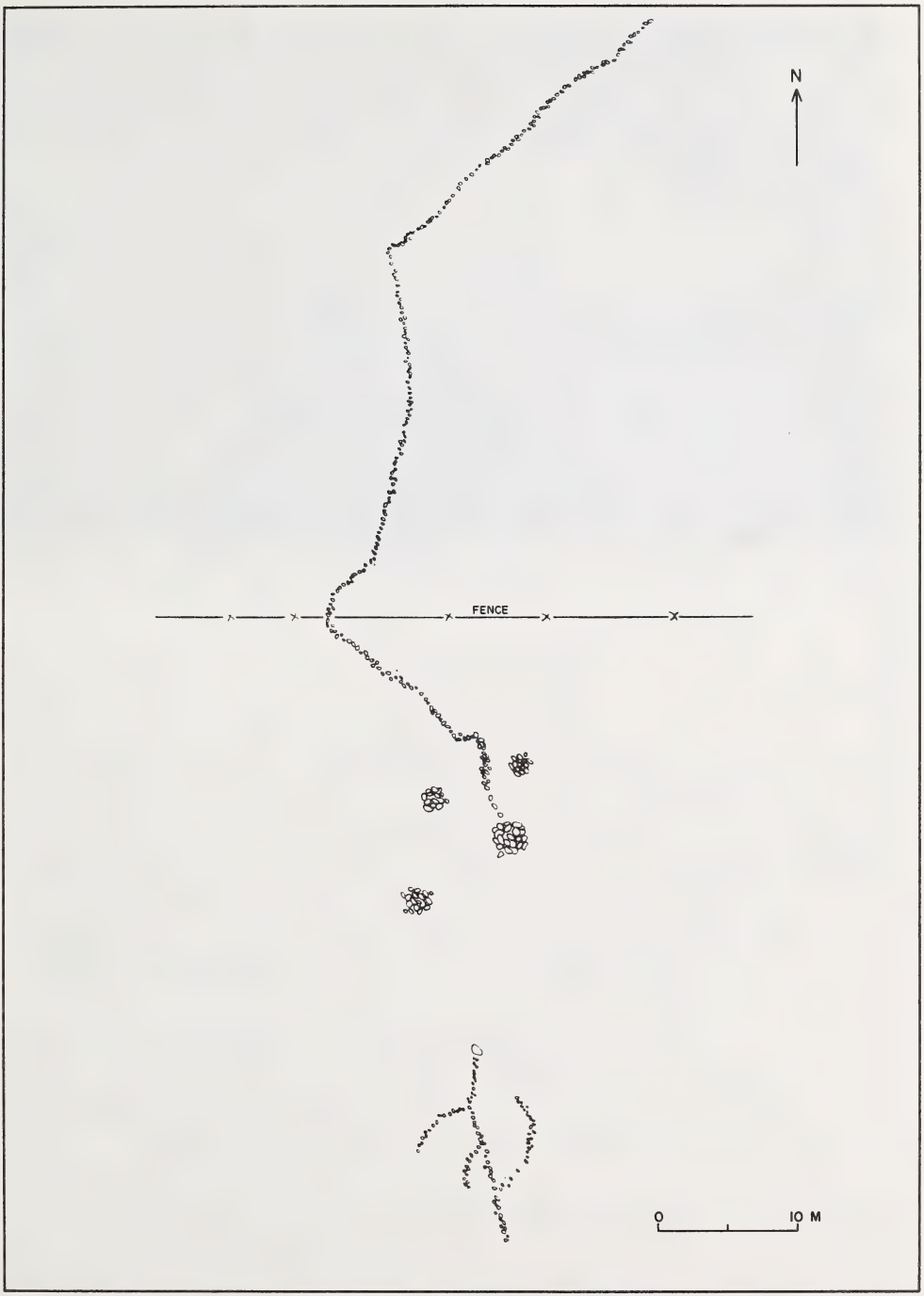


Figure 18. DgOo-1, Manyberries medicine wheel, cairns and stone alignments north of main feature (from Walde 1976).

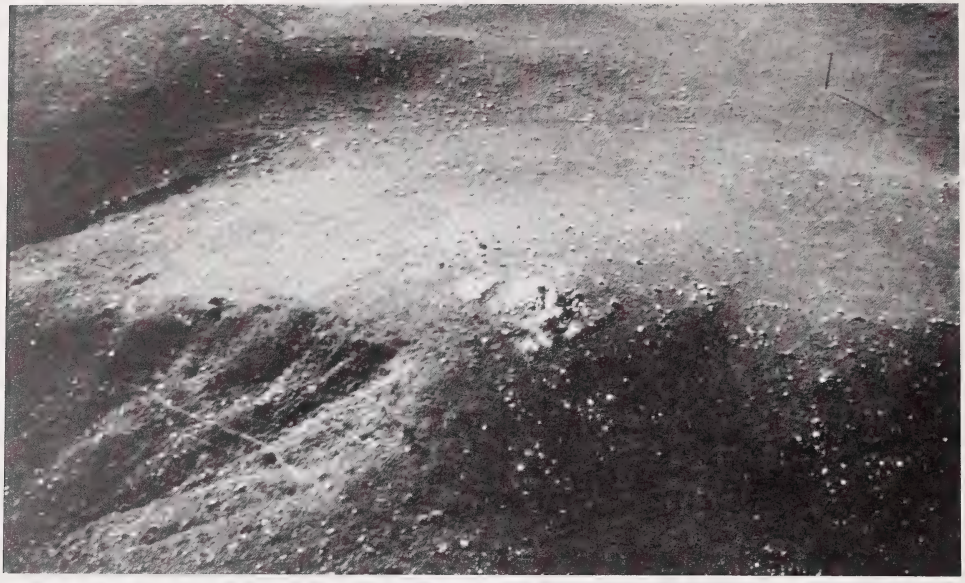


Figure 19. Aerial view of DgOo-1, Manyberries, Subgroup 1 medicine wheel.

SUBGROUP 2 MEDICINE WHEELS

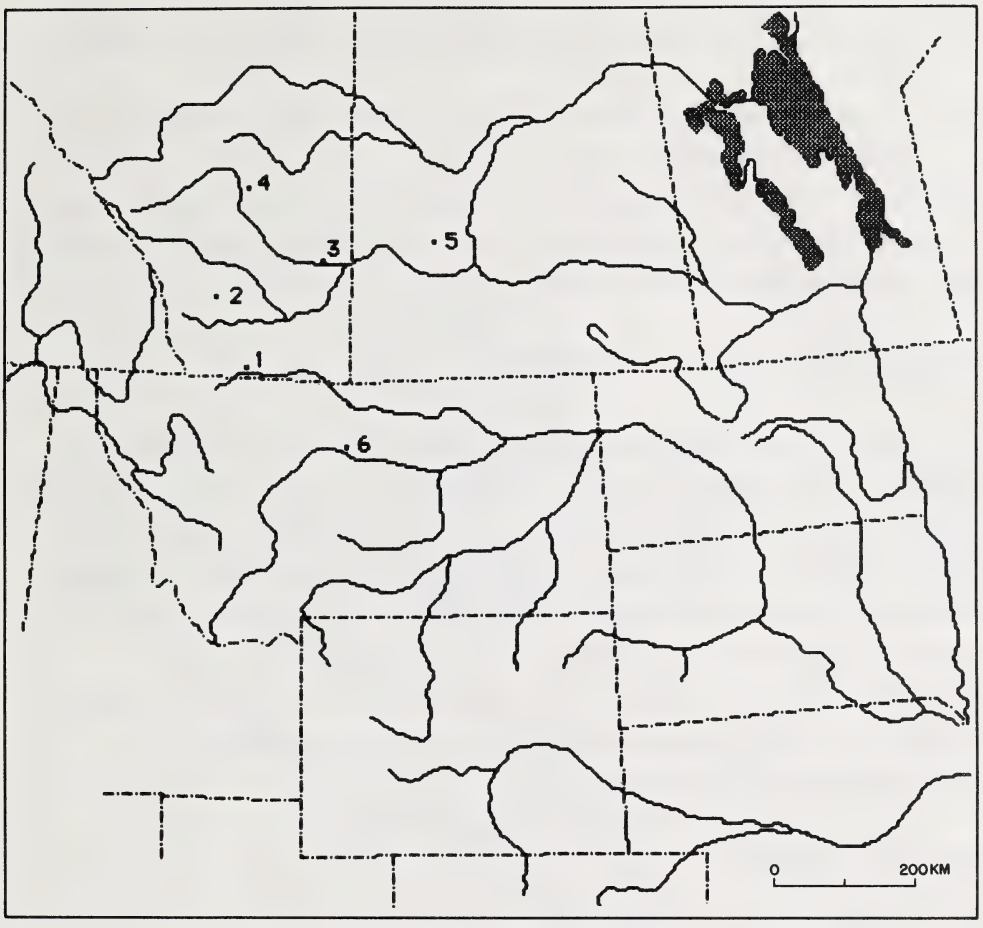
Subgroup 2 medicine wheels are characterized by a central stone cairn surrounded by a stone ring. Extending outward from the ring are two parallel or diverging stone lines which form a passageway oriented towards the centre of the structure. The stone lines usually terminate at the ring wall but rarely may extend a short distance within it.

Six (9%) of the 67 medicine wheel structures fall into Subgroup 2, making it the fourth largest subgroup category (Table 4). The six structures are widely distributed, with four found in southern Alberta, one in south central Saskatchewan and one in north central Montana (see Figure 20). Unconfirmed verbal reports suggest the presence of another structure along the Marias River in north central Montana.

PHYSIOGRAPHIC AND TOPOGRAPHIC SETTING

Subgroup 2 structures are located in three physiographic settings:

(1) on open prairie surfaces along the margins of major river valleys (n=2);



1 - DhPb-2 Antelope Hill
2 - EaPe-1 Sundial Hill
3 - EfOq-36 Anderson No. 1
4 - EgPn-53 Barry
5 - EgNx-1 Hughton
6 - Eagle Butte

Figure 20. Distribution of Subgroup 2 medicine wheels.

(2) on open prairie surfaces away from various types of escarpments (n=1); or

(3) on open prairie surfaces at the crest of a hill or ridge, away from escarpment edges (n=3).

Topographic relief, expressed by the number of 25-foot contour lines present within a 0.5 km radius of the site margins, ranges from five to eight contour lines, with an average of 6.3 lines.

METRIC AND NON-METRIC CHARACTERISTICS

Metric data regarding the size of the stone ring indicate that diameters (n=5) range from 9 to 27 m, with no average value calculable (Table 5). Central cairn diameters (n=4) range from 4 to 8 m with a mean of 5.75 m. Cairn heights (n=2) range from 1 to 1.75 m. Stone lined passageways are oriented variously with their distal ends pointing to the SE (n=2), SSW (n=1), ESE (n=1), NE (n=1), or indeterminate (n=1). The Sundial Hill structure is characterized by a concentric pair of stone circles with a single passageway interconnecting both (Figure 21).

ANCILLARY FEATURES

Two of the six medicine wheels comprising Subgroup 2 contained no ancillary features within the stone ring, and no such observations were available for one of the features. At Sundial Hill (Figure 22), a small stone cairn and one or two depressions were noted within the stone circle. At Antelope Hill (Figures 23 and 24), two small stone cairns formed the distal ends of the stone lines which form the passageway. At the Anderson No. 1 (Figure 25), the stone ring jogs outward, over and then back in, to form a square notch which protrudes out about 1 m.

Observations on ancillary features outside the stone ring are not available at three of the six sites (EgNx-1, EgPn-53 and Eagle Butte). From one to four small stone cairns were noted outside the stone ring

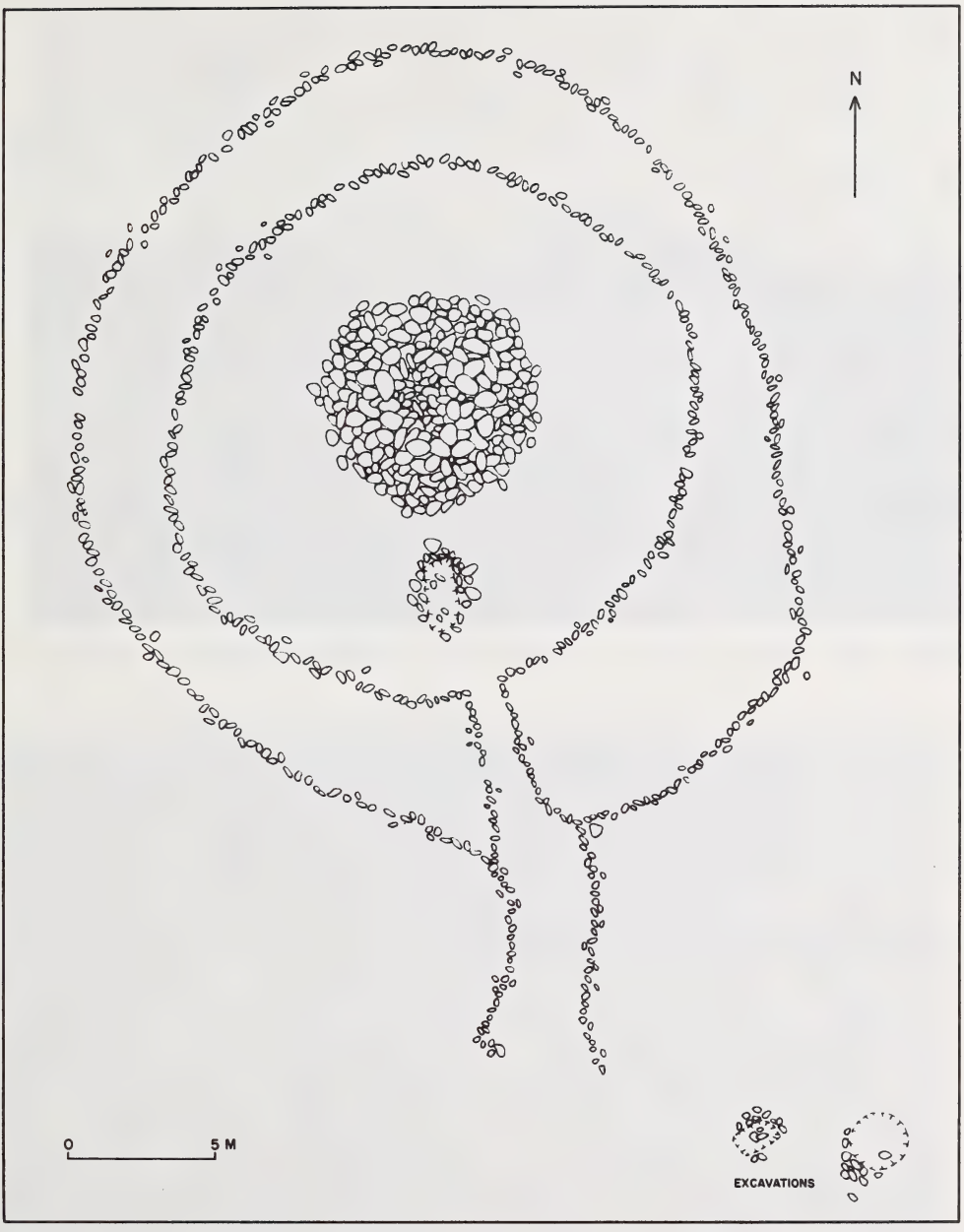


Figure 21. Plan map of EaPe-1, Sundial Hill, Subgroup 2 medicine wheel (from Walde 1976).

Figure 22. View of EaPe-1, Sundial Hill, Subgroup 2 medicine wheel.

at the remaining three sites. In addition, tipi ring-size stone circles were observed at two sites (DhPb-2 and EfOq-36). At Sundial Hill, three earth depressions were noted outside the stone circle, as well as the one or two noted inside the circle.

FEATURE CONDITION AND RESEARCH STATUS

All six of the structures comprising Subgroup 2 have been subjected to varying degrees of vandalism, primarily disturbance of the central cairn. Data were not available to evaluate whether the depressions noted within and outside the stone ring at Sundial Hill are of aboriginal origin or simply reflect vandalism. No central cairn is currently present at the Eagle Butte structure; however, local residents indicate that one or more interior cairns were originally present (see Figure 26).

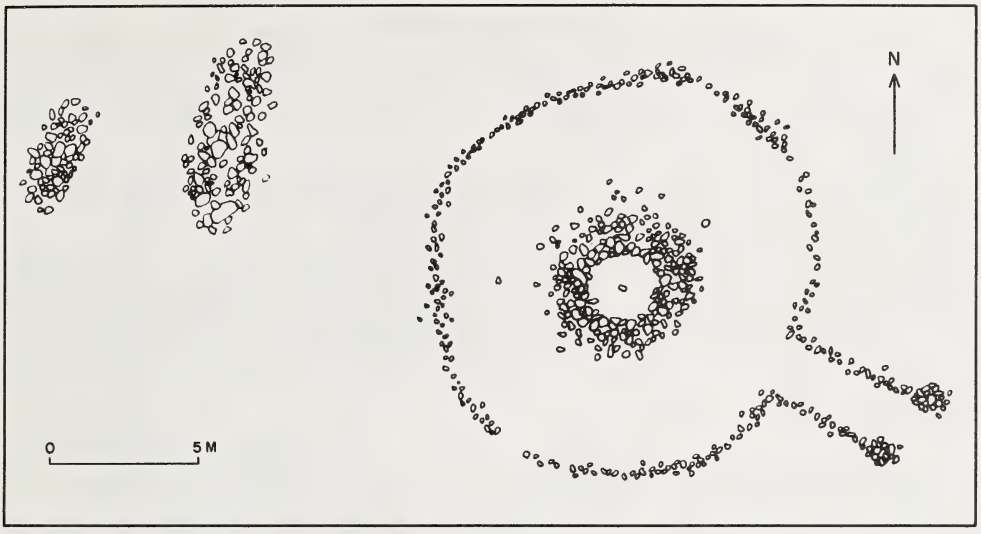


Figure 23. Plan map of DhPb-2, Antelope Hill, Subgroup 2 medicine wheel (from Walde 1976).

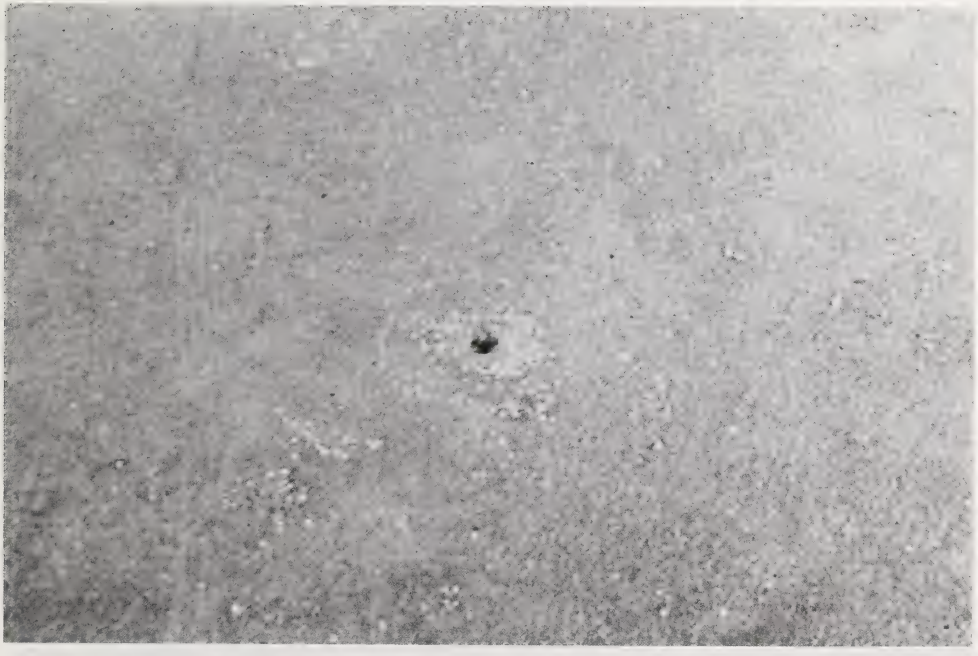


Figure 24. Aerial view of DhPb-2, Antelope Hill, Subgroup 2 medicine wheel.

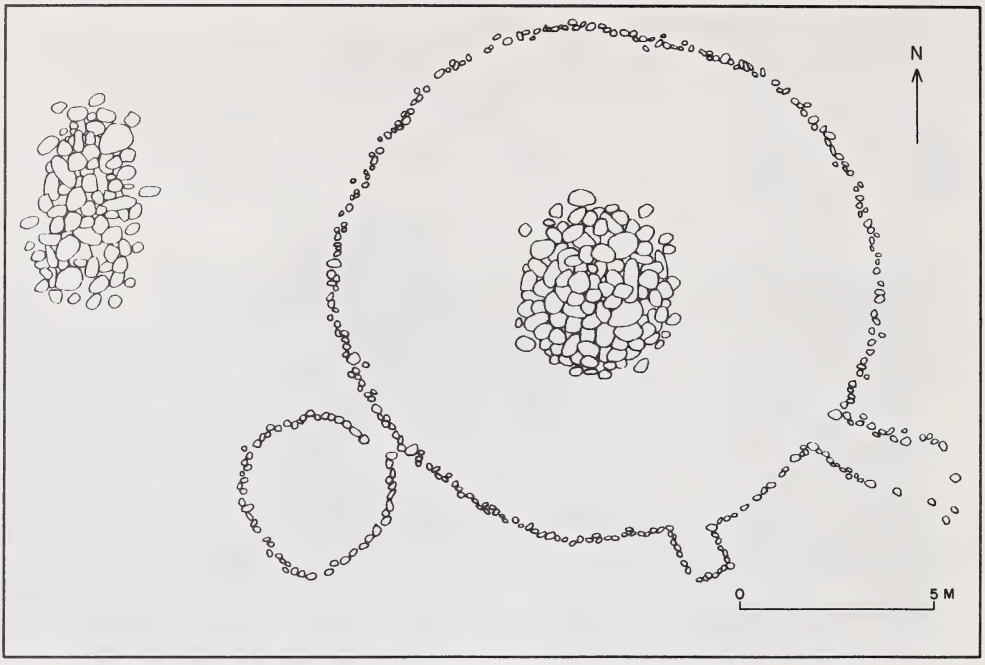


Figure 25. Detailed map of Anderson No. 1, Subgroup 2 medicine wheel (from Walde 1976).

Figure 26. Aerial view of Eagle Butte, Subgroup 2 medicine wheel.

Maps are available for all but the Eagle Butte structure. The Barry (Figures 27 and 28) and Hughton (Figure 29) medicine wheels have been excavated to varying extents, but the results are unpublished.

EVIDENCE RELATING TO CONSTRUCTION AND USE

Ethnographic Evidence

No historic or ethnographic references were encountered regarding Subgroup 2 medicine wheels.

Archaeological Evidence

Although two of the six structures have been excavated, detailed reports on this work are not available. Forbis (1970:28) notes that no artifacts were found in excavations within the central cairn at the Barry medicine wheel (EgPn-53). At the Hughton wheel (EgNx-1), Kehoe and Kehoe (1977:87) note that "Late prehistoric types" of artifacts were recovered in excavation. Reeves (personal communication 1986) observed what appeared to be fragments of human bone in the wall of a vandals pit within the central cairn at Antelope Hill.

SUBGROUP 3 MEDICINE WHEELS

Subgroup 3 medicine wheels are characterized by a prominent central cairn from which two or more stone lines extend in various directions. Twelve (18%) of the 67 medicine wheel structures fall into Subgroup 3, making it the third largest subgroup category (Table 6). Seven of the twelve structures are distributed throughout southern Saskatchewan. Four of the remaining five structures are found in southern Alberta, and one is located in north central Montana (Figure 30).

PHYSIOGRAPHIC AND TOPOGRAPHIC SETTING

Subgroup 3 structures are located in a variety of physiographic locales:

(1) on open prairie adjacent to major stream valleys (n=2);

Figure 27. View of EgPn-53, Barry medicine wheel, Subgroup 2.

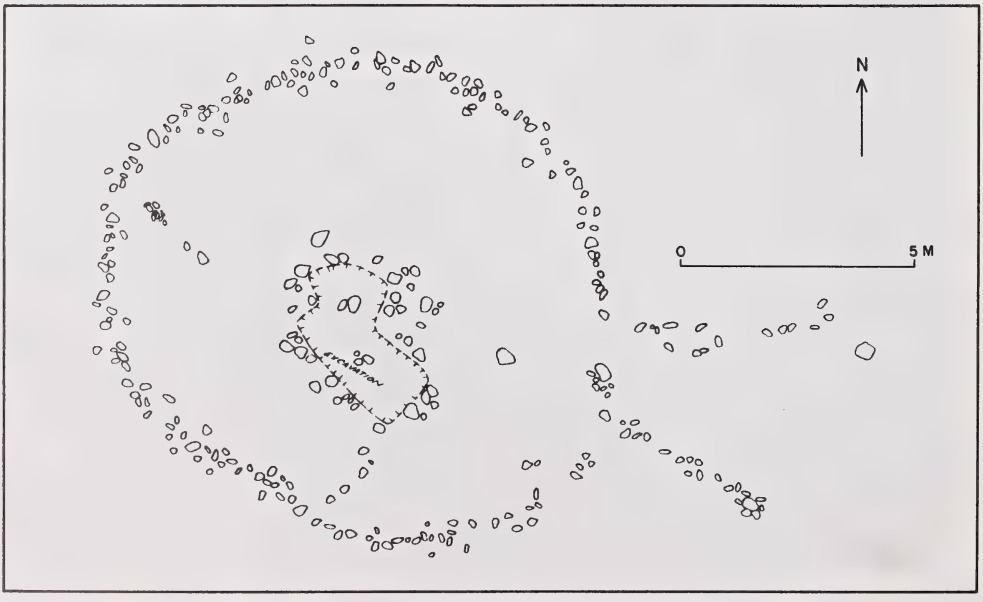


Figure 28. Map of Barry medicine wheel, Subgroup 2 (from Walde 1976).

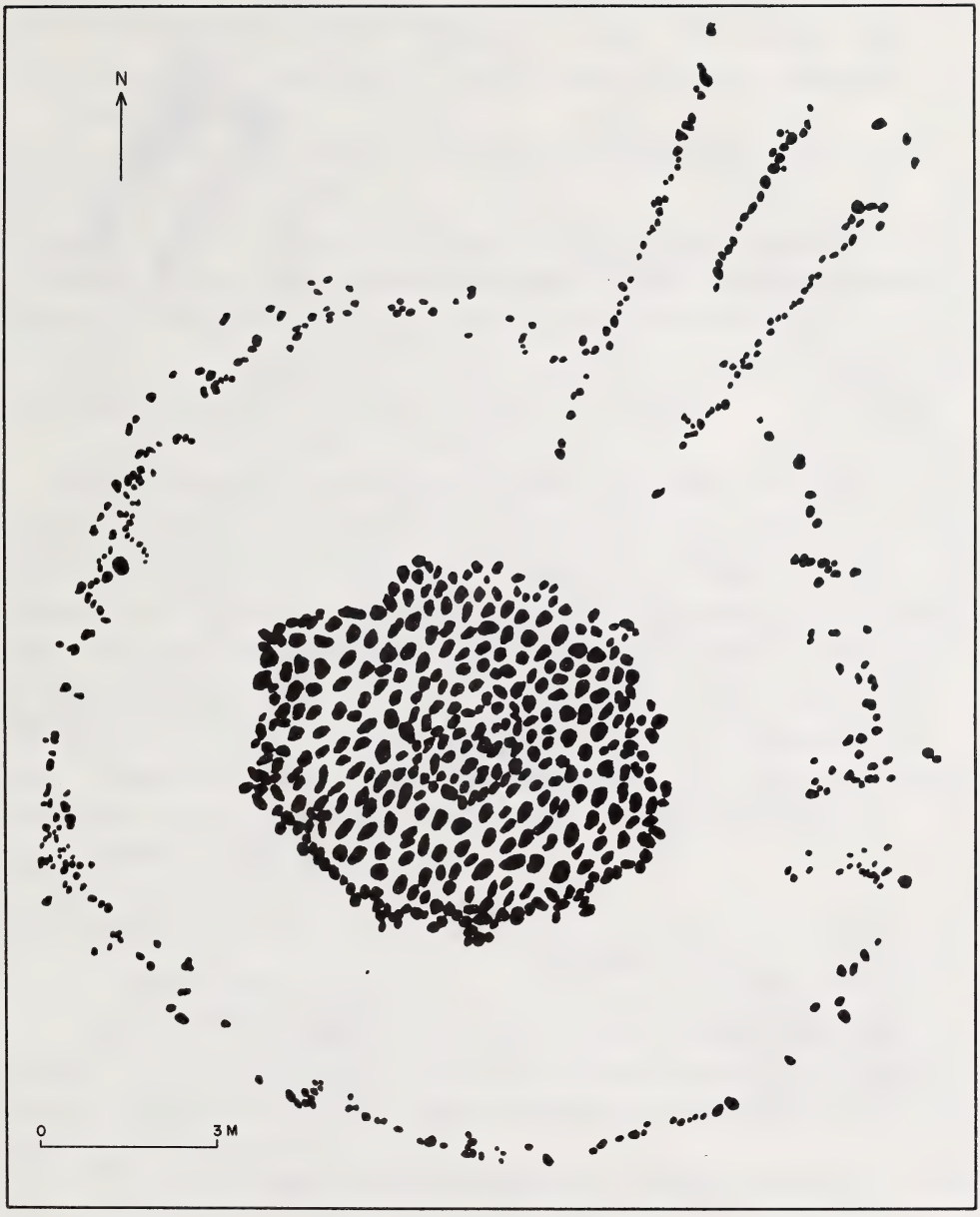
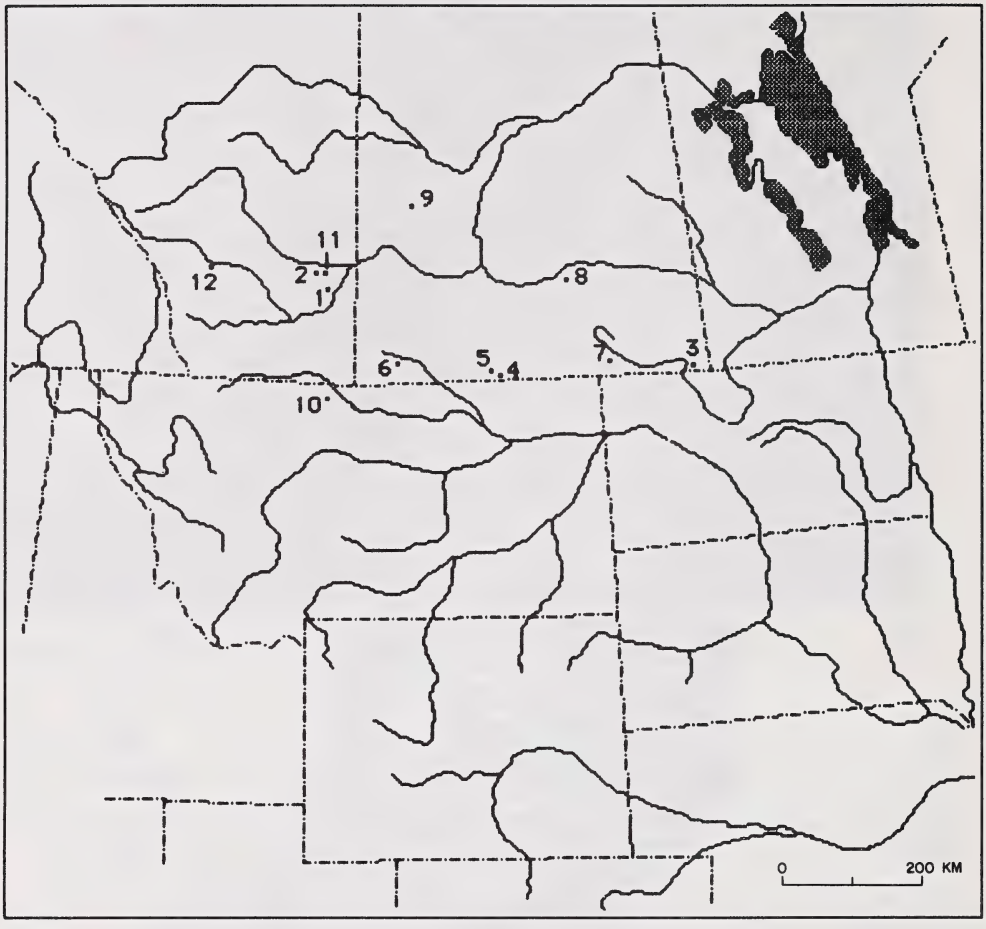


Figure 29. Map of Hughton medicine wheel, Subgroup 2 (from Kehoe and Kehoe 1979: 18, Figure 7).



1 - EdOo-3 7 - DiMv-2 Halbrite
2 - EfOp-58 Rinker
3 - DgMn-3 Oxbow East
4 - DgNf-3 Doug Wade
5 - DhNg-1 Birdfoot
6 - DhOb-2 Canuck
8 - EeNg-1 Jelly Ranch
9 - ElOd-2 Plenty
10 - 24HL32
11 - EfOp-414
12 - DjPj-23 Nitapinaw's

Figure 30. Distribution of Subgroup 3 medicine wheels.

(2) on open prairie surfaces adjacent to major river valleys (n=6);
(3) on open prairie surfaces along the edge of a major escarpment feature (n=1);
(4) on open prairie surfaces atop high hills or ridges (n=2); or
(5) indeterminate (n=1).

Topographic relief ranges from three to eight contour lines (n=8), with an average of 5.9 lines. Of the four largest medicine wheel subgroups, Subgroup 3 is characterized by the lowest average relief.

METRIC AND NON-METRIC CHARACTERISTICS

The diameters of central cairns (n=8) range from 3 to 8 m; the mean diameter is 4.75 m (Table 7). Cairn height data are available for only two structures (1.8 and 2 m). From two to six spokes extend outward from the central cairns (n=8), with an average of four spokes. Individual spokes range from 5 to 103 m in length. One of the spokes at EdOo-3 branches or bifurcates. At three sites, small cairns form the terminus of two or three of the spokes. At the Plenty medicine wheel (Figure 31), a small cairn is incorporated into the midsection of one spoke; similar cairns are incorporated into two spokes at the Canuck medicine wheel (Figure 32).

ANCILLARY FEATURES

Aside from the previously discussed cairns incorporated into spokes, tipi ring-size stone circles observed at four sites (DjPf-23, DiMv-2, EfOp-58 and EfOp-414) are the only ancillary features noted for Subgroup 3 medicine wheels.

FEATURE CONDITION AND RESEARCH STATUS

Available data indicate that all but two of the twelve structures (EdOo-3 and ElOd-2) have been subjected to varying degrees of disturbance. The Canuck medicine wheel is believed to have been completely destroyed by cultivation.

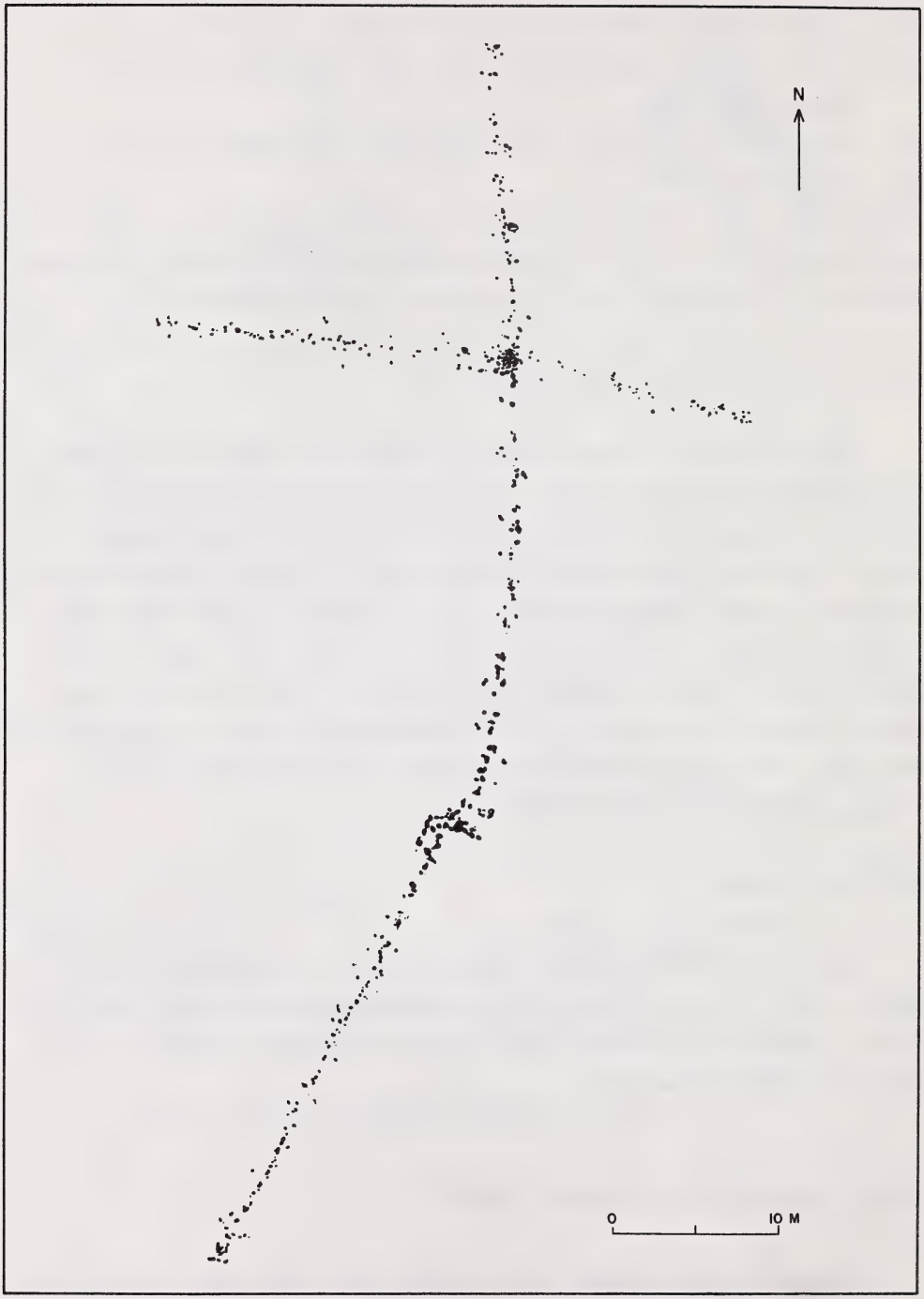


Figure 31. Map of Plenty medicine wheel, Subgroup 3 (from Kehoe and Kehoe 1979:21).

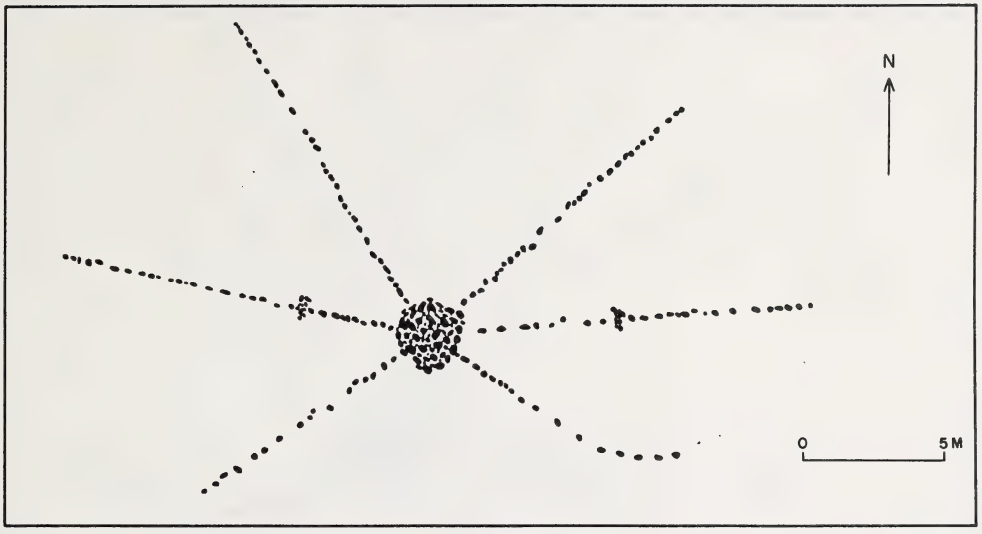


Figure 32. Plan map of DhOb-2, Canuck medicine wheel, Subgroup 3 (from Watson 1974a:6).

Detailed or sketch maps are available for nine of the twelve structures (Figures 31 to 39). Six of the twelve sites have been excavated to varying extents.

EVIDENCE RELATING TO CONSTRUCTION AND USE

Ethnographic Evidence

Kehoe notes that the Jelly Ranch medicine wheel (EeNg-1) is situated within a large tipi ring site and that "historical records indicate a smallpox epidemic at the camp" (Kehoe 1972:186). John McLean, while at Fort McLeod in southern Alberta in 1880, observed a structure apparently comparable to Subgroup 3 medicine wheels.

> Several great battles were fought, and these cairns were placed there to commemorate these events, and probably to mark the spot where some their greatest warriors died. When a great chief or warrior died a lodge was placed over him, and when this was thrown done by the wind, the body of the deceased was laid upon the ground, and a cairn of stones erected over it. There is a cairn called by the Indians the "Gambler's Cairn," near the store of I. G. Baker, in the town of MacLeod. Several years ago a Peigan camp of Indians located on this spot was attacked by smallpox, and the disease proved so fatal that fifty dead lodges were standing. Among those who died was Aikutee; i.e., the

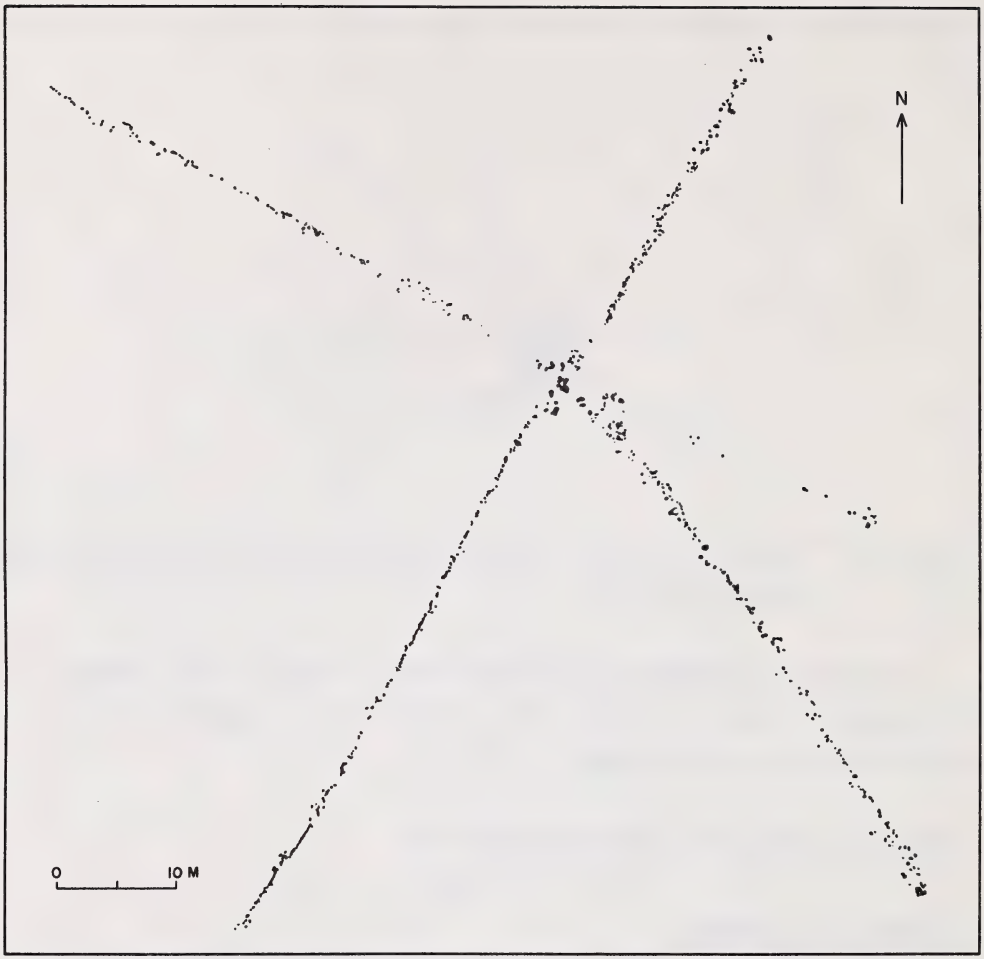


Figure 33. Map of Doug Wade medicine wheel, Subgroup 3 (from Kehoe and Kehoe 1979:22).

> Gambler, head chief of the Peigan tribe. His people placed a lodge over him and when that had been blown down by the western winds, he was reverently laid upon the ground, and the cairn of stones erected. The original cairn was three or four feet in diameter, with rows of stones between forty and fifty feet in length, leading to the cairn. Only one row of stones remains, and the cairn is worn nearly level with the street. This simple monument is of little interest to the passing stranger; but the Indian riding past will turn to his comrade and say, "Aikutee" (McLean 1896:579).

Archaeological Evidence

Archaeological evidence for Subgroup 3 structures is limited to that provided by Montgomery (1908) for the Halbrite wheel (DiMv-2).

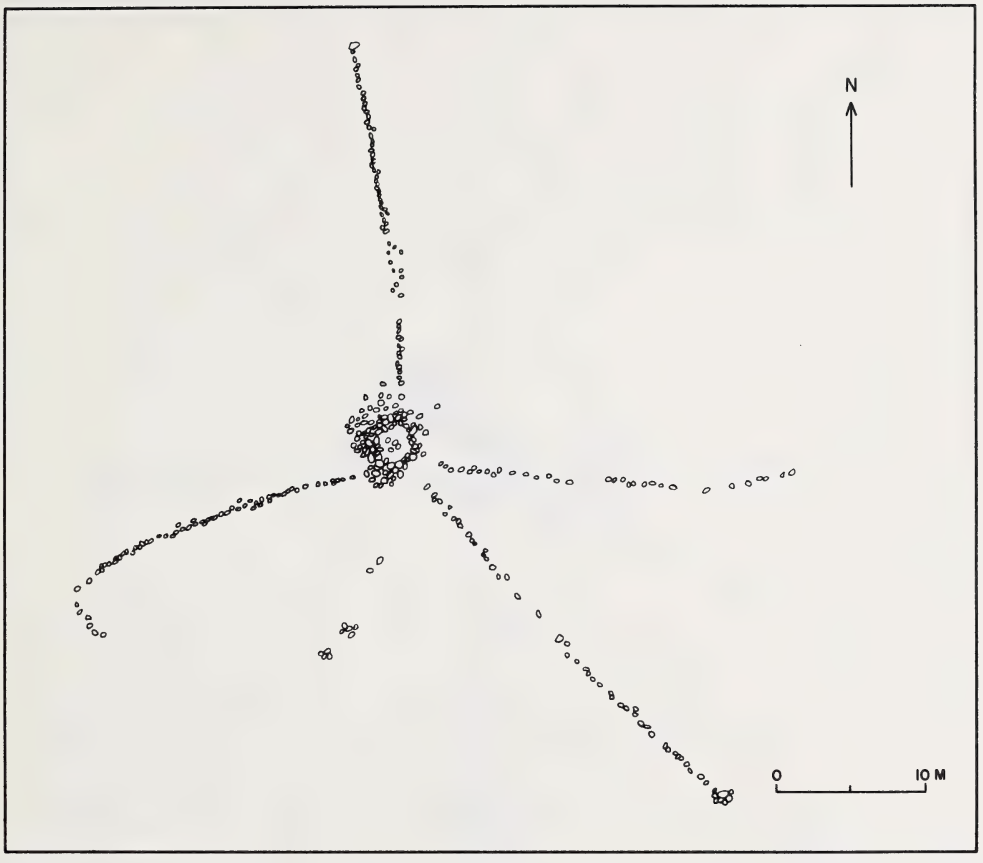


Figure 34. Plan map of EfOp-58, Rinker medicine wheel, Subgroup 3 (from Walde 1976).

This work resulted in the recovery of a single human burial, as well as artifacts of "Late prehistoric type" (Kehoe and Kehoe 1977:87).

SUBGROUP 4 MEDICINE WHEELS

Subgroup 4 medicine wheels consist of a stone ring from the outer margins of which radiate two or more stone lines. Eighteen (27%) of the 67 medicine wheel structures discussed here fit into Subgroup 4 (Table 8), the second largest medicine wheel category. Fourteen of these 18 structures are clustered within southern Alberta. Three of the remaining structures are found in eastern Montana, and a single structure is found in south central Saskatchewan (see Figure 40).

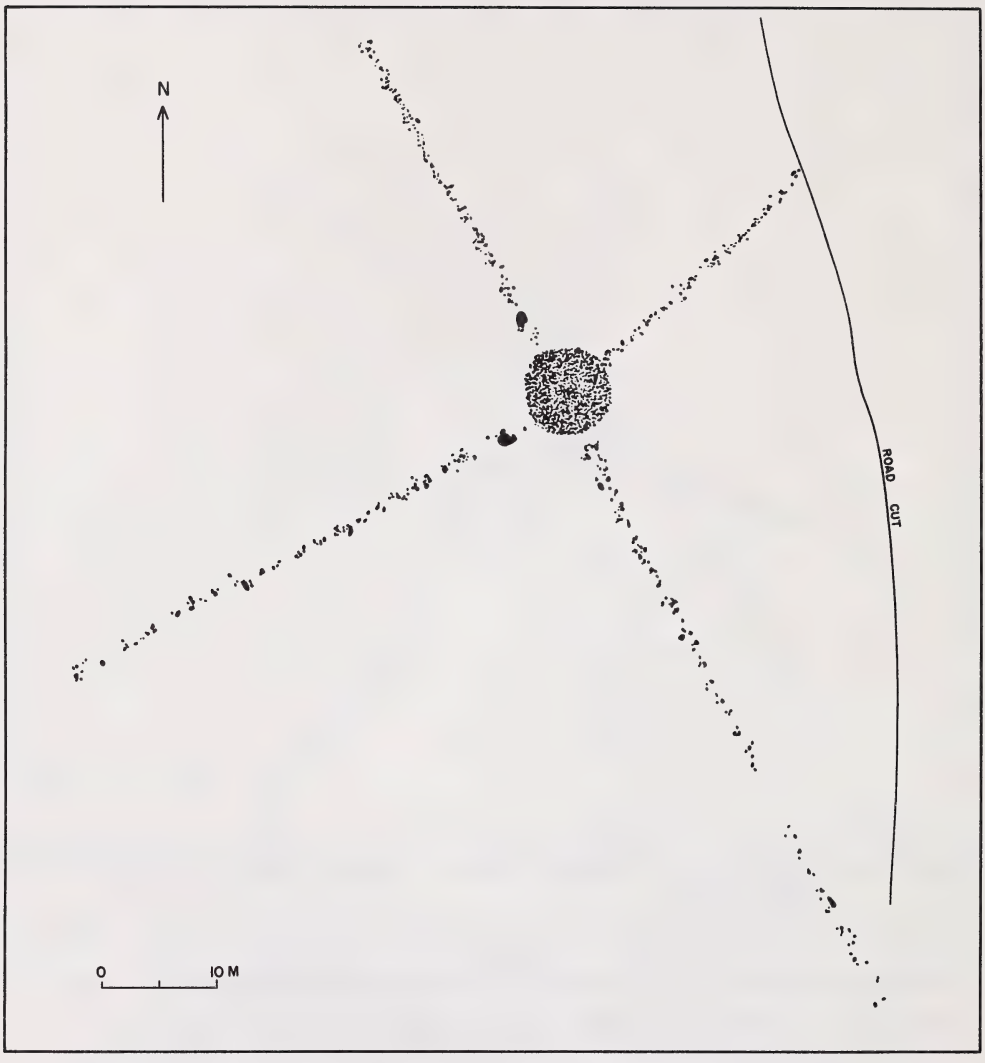


Figure 35. Map of Halbrite medicine wheel, Subgroup 3 (from Kehoe and Kehoe 1979:20).

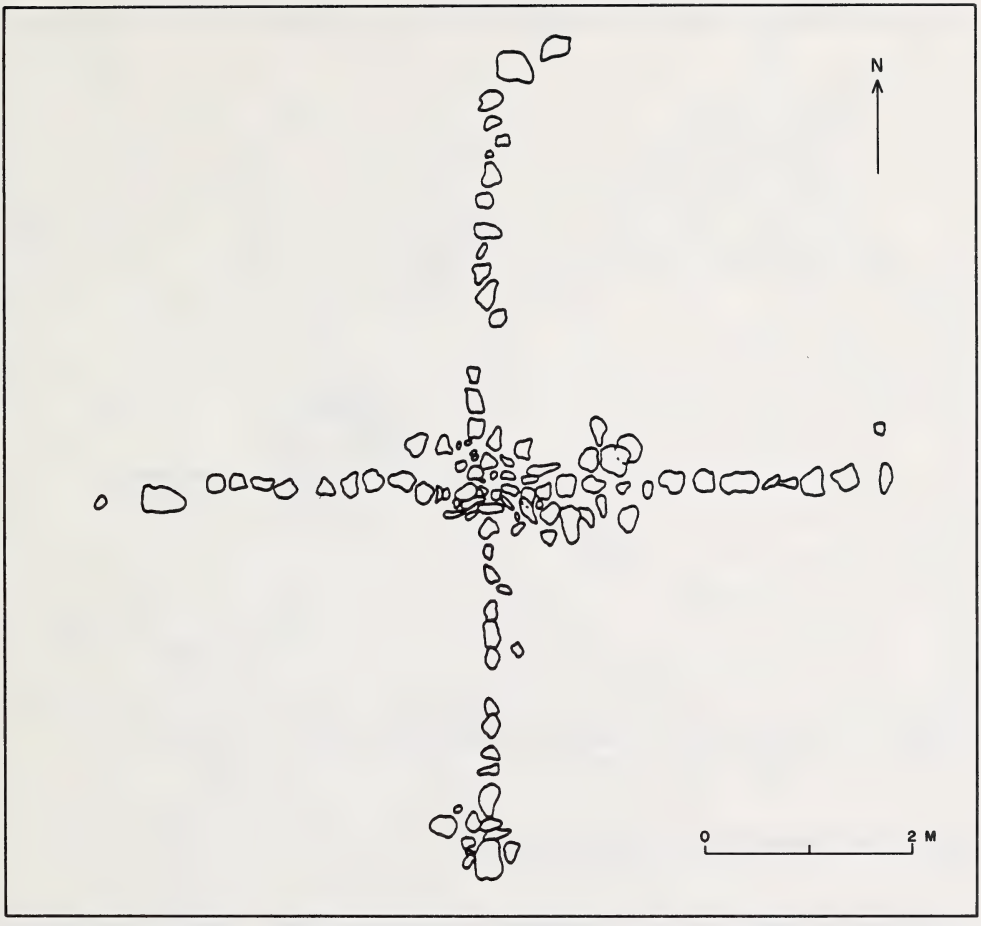


Figure 36. Sketch map of Nitapinaw's medicine wheel, Subgroup 3 (from Conaty and Tailfeathers 1985:49).

PHYSIOGRAPHIC AND TOPOGRAPHIC SETTING

Subgroup 4 medicine wheels are found in the following physiographic settings:

(1) on open prairie surfaces along the edge of major river valley (n=10);

(2) on open prairie surfaces atop the crest of a ridge or hill (n=2);

(3) in the central portion of a major river valley bottom (n=1); and

(4) indeterminate (n=5).

Topographic relief ranges from 1 to 8 contour lines (n=12), with an average of 6.4 lines.

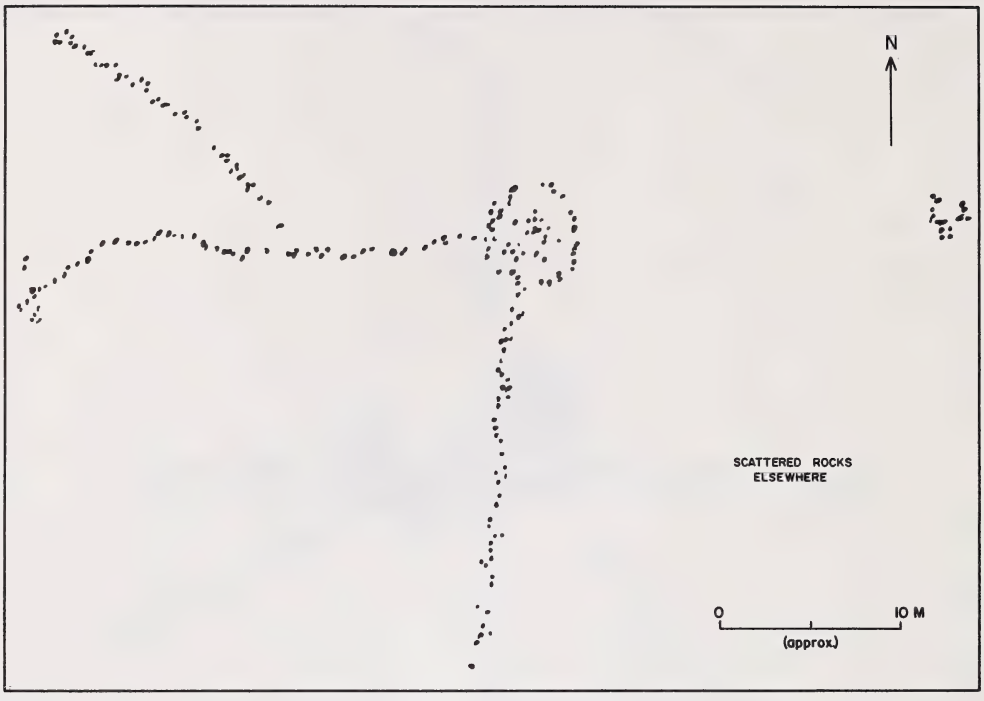


Figure 37. Sketch map of EdOo-3, Subgroup 3 medicine wheel (from A.S.A. site form).

METRIC AND NON-METRIC CHARACTERISTICS

Stone rings (n=17) of Subgroup 4 medicine wheels range from 1 to 9 m in diameter, with a mean of 5.6 m (Table 9). At one metre, the diameter of the Fort Smith wheel (Figure 41) is the smallest and apparently is anomylous in relation to the diameter of other structures. The stone ring at the Wilson Russel site is also unusual in that it consists of a thick band of stones 1.25 to 1.75 m in width with the central open area only 3.5 m in diameter. The Wilson Russel wheel is also unusual in having the fewest number of stone spokes (3) in comparison to other Subgroup 4 structures which have up to 18 spokes. The average number of spokes for the subgroup as a whole is 7.4 (n=18).

Spokes range from 1 to 120 m in length and generally consist of a continuous line or narrow band of stones. At the Wolf Child (Figure 42) and Zeigenbein (Figure 43) wheels, however, individual spokes were

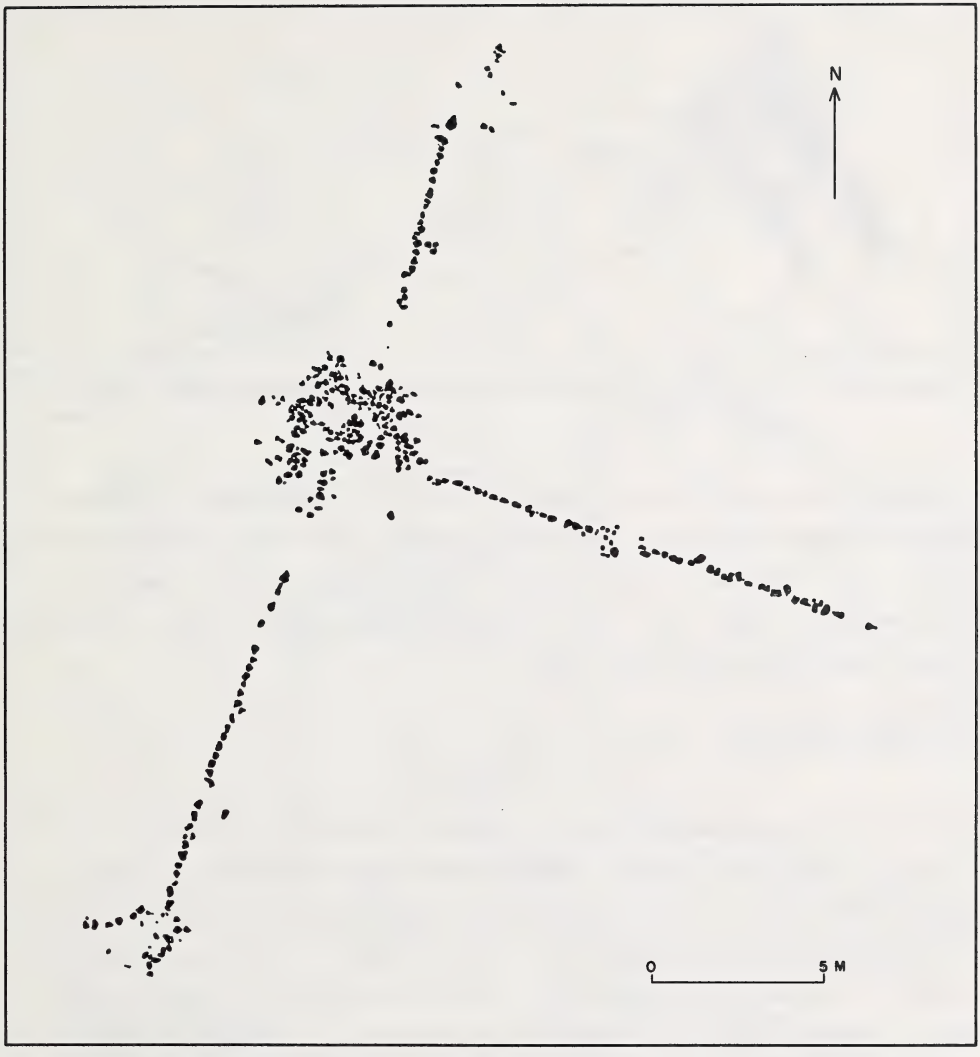


Figure 38. Map of Jelly Ranch medicine wheel, Subgroup 3 (from Watson 1972a:18).

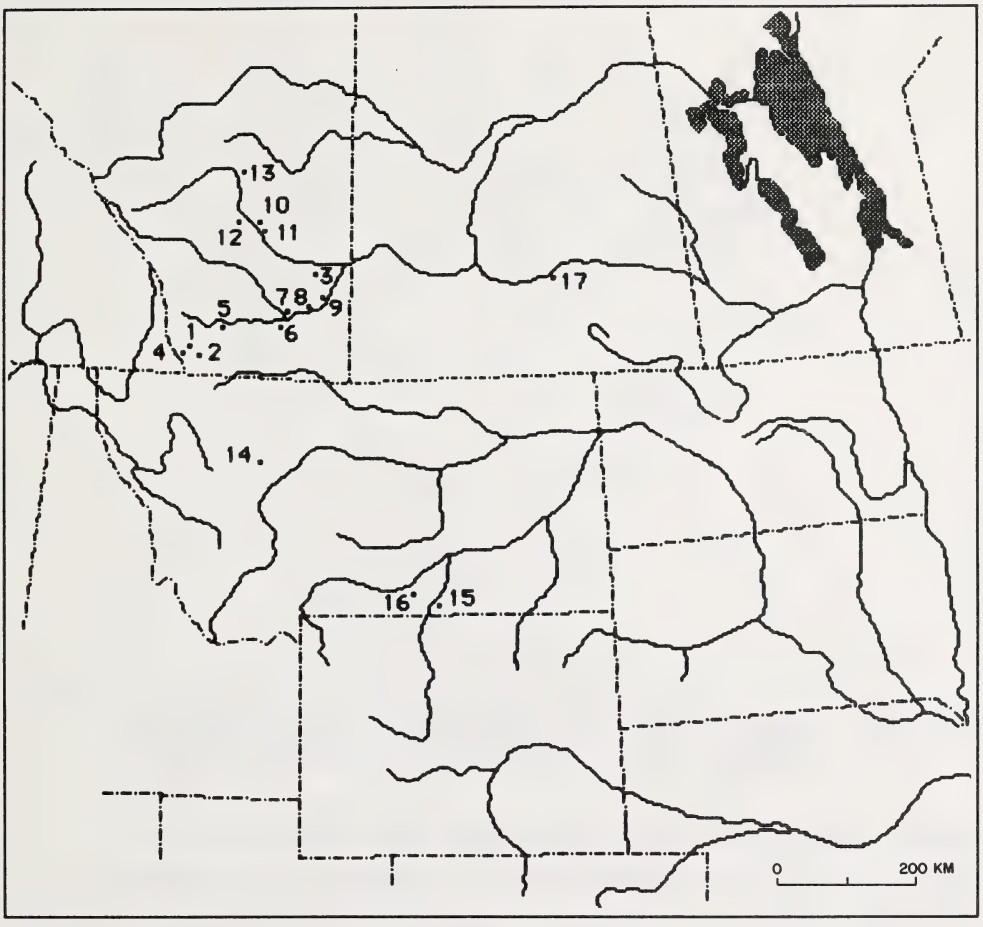
Figure 39. Sketch map of 24HL32, Subgroup 3 medicine wheel (from Keyser 1979:22).

formed of a linear series of small cairns. At four sites, from two to three of the spokes bifurcated or branched. The ends of from one to 14 spokes at 11 features were marked by small stone cairns. Small, intermediate cairns were found along the line of two spokes at the Dark Horse wheel (EdOo-38; Figure 44).

ANCILLARY FEATURES

Six of the 18 wheels had no features within the stone circle. One (n=5) or sometimes two (n=2) small stone rings, referred to and interpreted here as hearth rings, were noted within the stone circle at seven structures (DiPi-2, DkPf-1, DlOw-6, EgOx-1, EkPe-3, 24TT67 and Steel). At the Dark Horse wheel, one and possibly two small cairns were present within the stone circle interior. A prominent depression reflecting either some aspect of feature construction or feature disturbance was noted within the Suffield medicine wheel (Figure 45). Breaks or openings in the stone circle wall and referred to as "doorway gaps" were noted at the Steel (Figure 46) and Many Spotted Horses (Figures 47 and 48) wheels.

Outside the stone circle, tipi ring-size stone circles were observed at seven sites, while small to intermediate stone cairns were present at 11 sites. Forbis (1960) examined a badly vandalized site named the Grassy Lake cairn (DlOv-1), measuring approximately 6 m across. Adjacent to the cairn were five smaller cairns and a stone



1 - Eagle Child
2 - Steel
3 - EdOo-38 Darkhorse
4 - DiPi-2 Wolf Child
5 - DkPf-1 Many Spotted Horses
6 - DlOv-2 Grassy Lake
7 - DlOu-6 Murphy
8 - EaOs-2 Suffield
9 - EcOp-4 Ellis
10 - EgOx-1 Suitor No. 1 and 2
11 - EgOx-29 Suitor No. 3
12 - EgOx-46 Hutton
13 - EkPe-3 Ziegenbein
14 - 24TT67 Sun River
15 - 24BH220 Forth Smith
16 - 24BH797 Grassy Knoll
17 - EeNe-14 Wilson Russel

Figure 40. Distribution of Subgroup 4 medicine wheels.

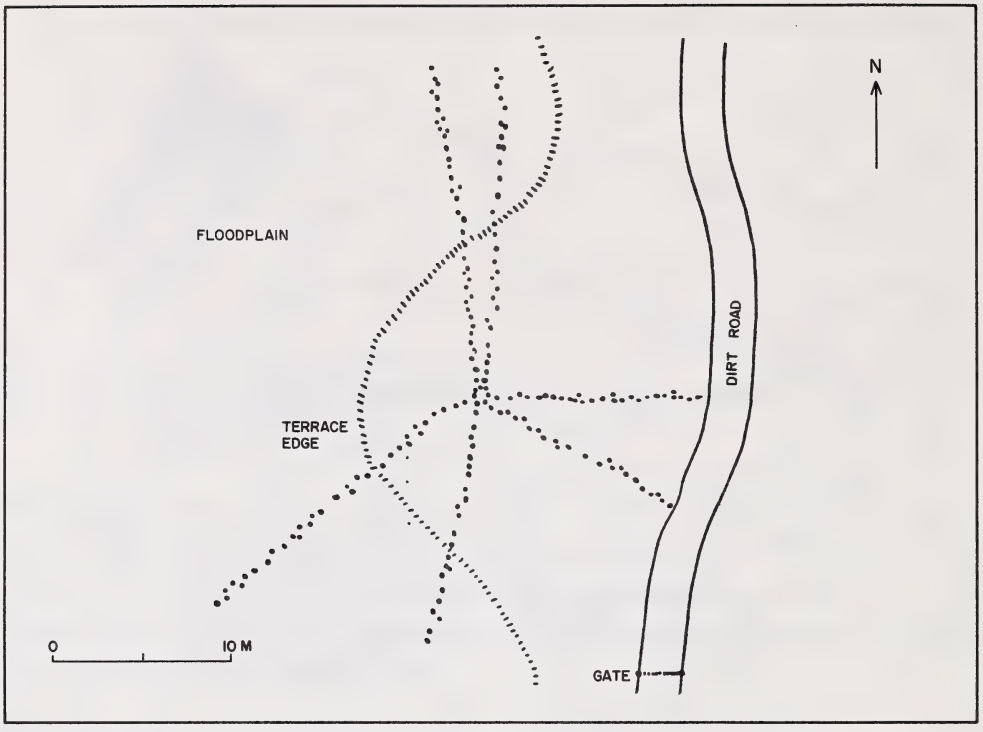


Figure 41. Drawing of the Fort Smith medicine wheel, 24BH220, Subgroup 4 (from University of Montana site form).

effigy possibly of a turtle (Wormington and Forbis 1965:121). Beginning 60 m west of this cairn is a Subgroup 4 medicine wheel, referred to here as the Grassy Lake medicine wheel (Figure 49). Twenty depressions were noted in the vicinity of the Wolf Child wheel (DiPi-2), and a single depression was noted outside of the Ziegenbein wheel (EkPe-3).

FEATURE CONDITION AND RESEARCH STATUS

Twelve of the 18 Subgroup 4 structures have been disturbed to varying extents. Detailed or sketch maps are available for 15 structures (Figures 41 to 47 and 49 to 56). Excavations have been carried out at one Subgroup 4 site and are reported by Brumley (1985). As noted, Forbis (1960) conducted and reported salvage excavations carried out at the Grassy Lake cairn. The Grassy Lake medicine wheel,

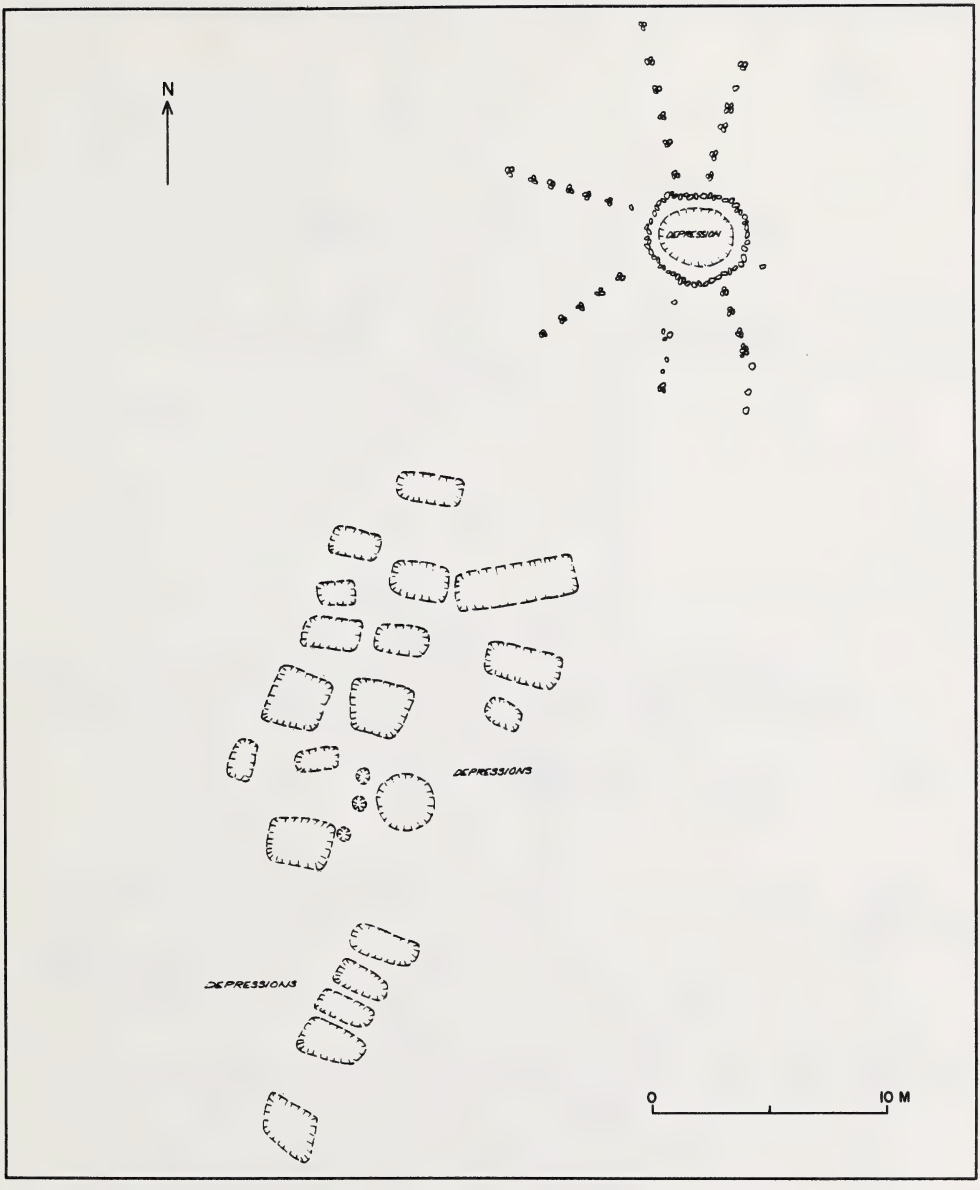


Figure 42. Detail of Wolf Child medicine wheel (Subgroup 4) and depression (from Walde 1976).

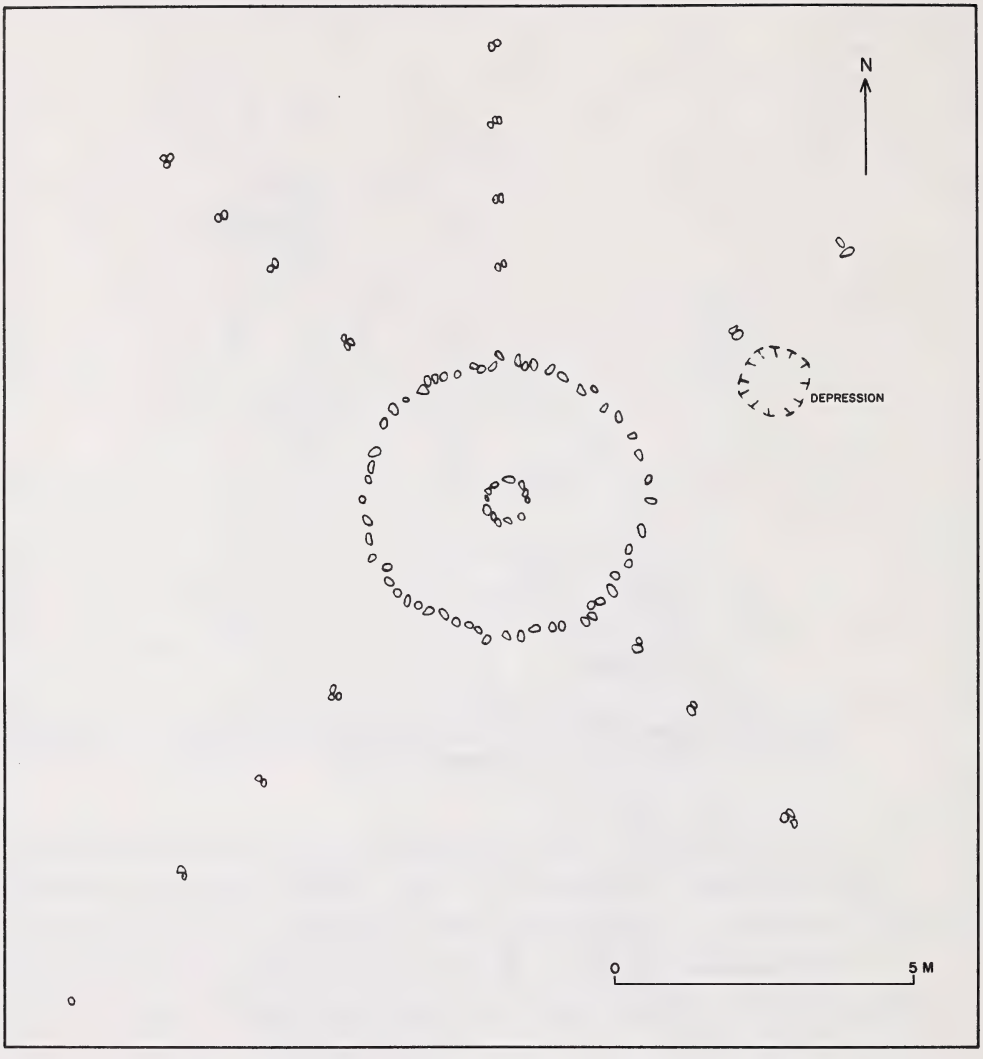


Figure 43. Detailed drawing of Ziegenbein, Subgroup 4 medicine wheel (from Walde 1976).

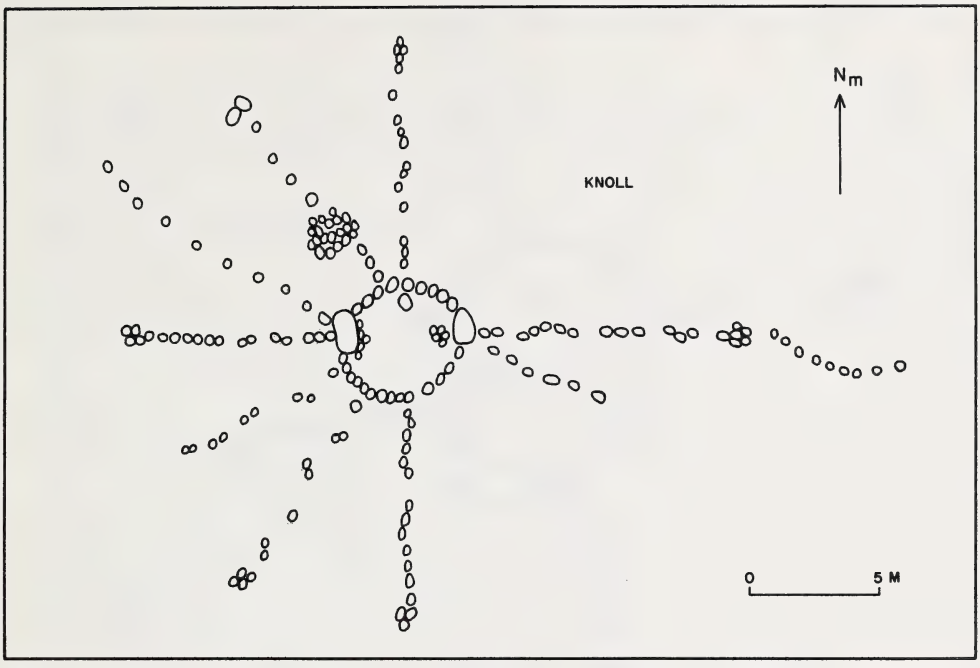


Figure 44. Sketch map of Dark Horse medicine wheel, Subgroup 4.

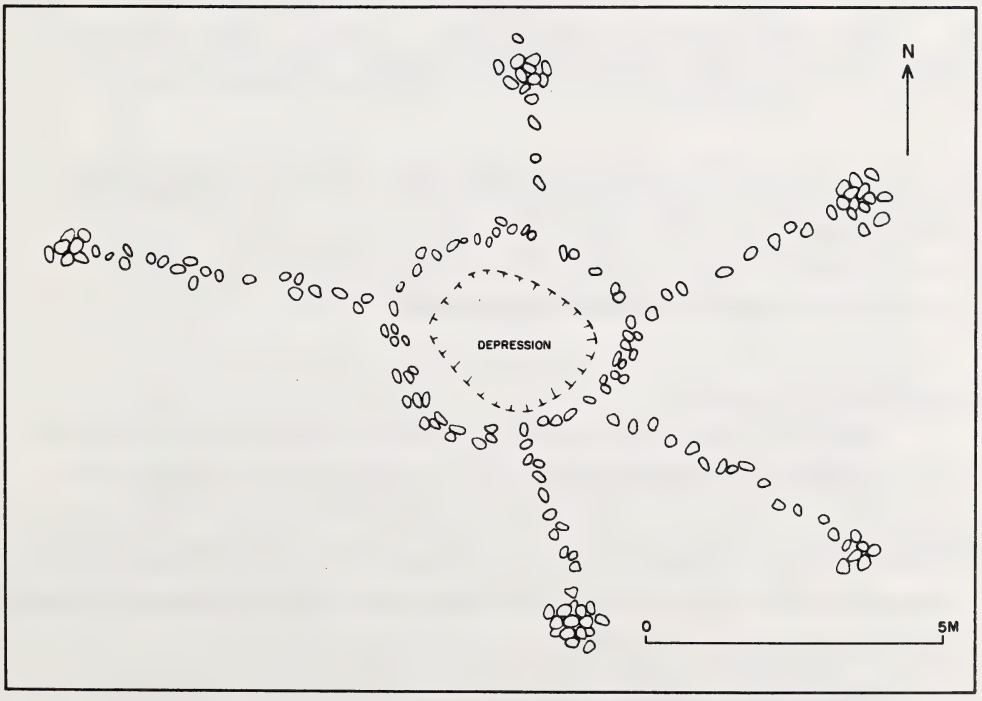


Figure 45. Plan map of EaOx-2, Suffield, Subgroup 4 medicine wheel (from Walde 1976).

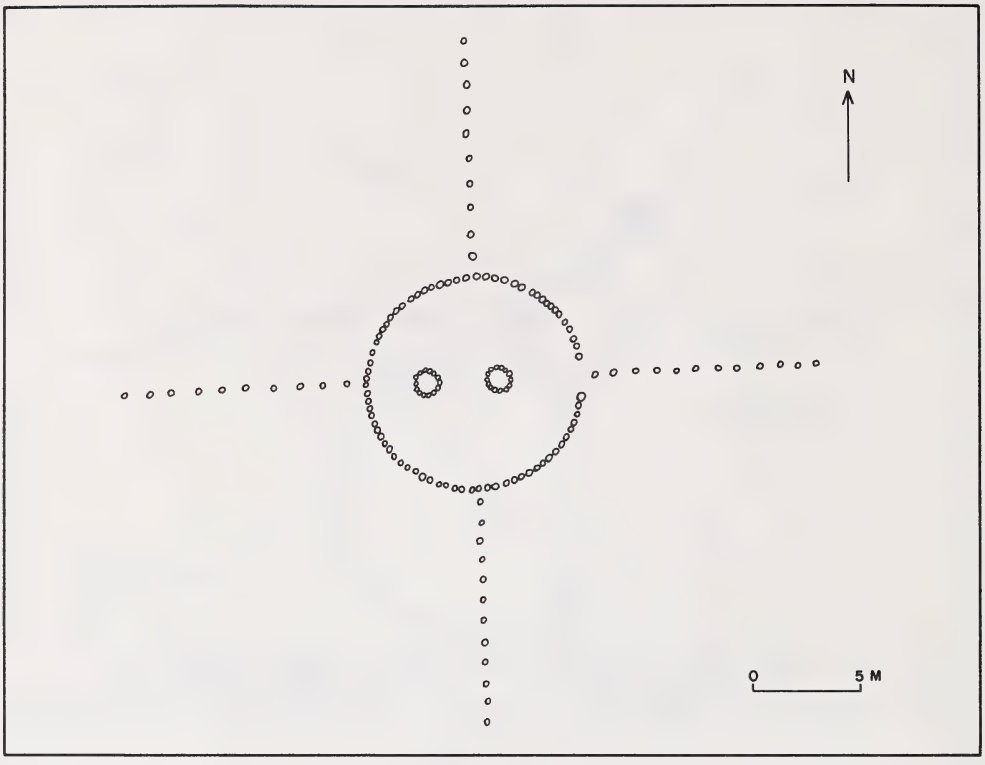


Figure 46. The Steel medicine wheel, Subgroup 4 (from Dempsey 1956:178).

a Subgroup 4 structure, is in the immediate vicinity and possibly associated.

EVIDENCE RELATING TO CONSTRUCTION AND USE

Ethnographic Evidence

Subgroup 4 medicine wheels are the only structures for which we have reliable and detailed information regarding construction and intended use. Working among the Blackfoot of northern Montana and southern Alberta, Kehoe (1954) and Dempsey (1956) interviewed several informants who were familiar with these structures. Adam White Man, an aged South Peigan, told Kehoe:

> I heard that when they buried a real chief, one that the people loved, they would pile rocks around the edge of his lodge and then place rows of rocks out from his burial tipi.

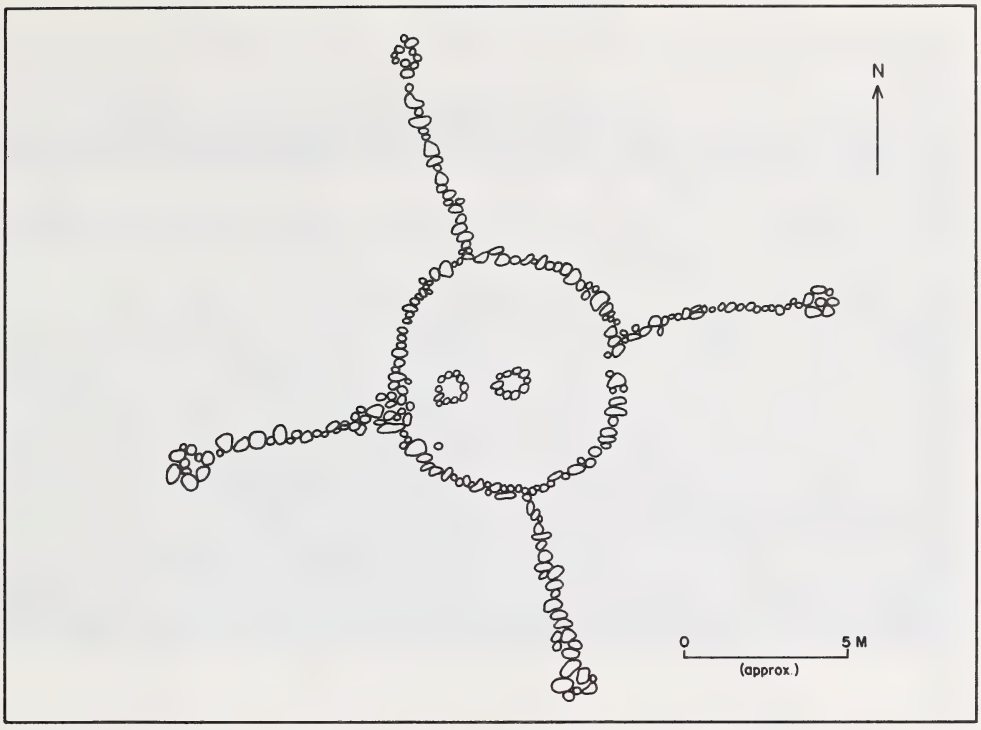


Figure 47. Detailed map of Many Spotted Horses medicine wheel (DkPf-1), Subgroup 4 (from Archaeological Society of Alberta 1971).

> The rock lines show that everybody went there to get something to eat. He is inviting someone everyday. People went there to live off him. Not every chief is treated like that - just the one loved by everyone. I have never seen this type of stone work but I heard of a chief in Canada who was buried like that (Adam White Man in Kehoe 1954:133).
>
> There was a circle of stones used by the Bloods to mark the place where great chiefs or medicine men died. They were bigger than the tipi rings and had five lines [it had been some years since he had seen one, but was fairly certain there were five] leading towards the centre like a wheel. In the middle a fireplace was built (Mills in Kehoe 1954:133).

Dempsey (1956) obtained considerably greater documentation regarding this type of structure and documented two that had been:

> . . . constructed within this century, and a summer's field work has revealed the date and ownership of the rings, the reason for their existence and has enabled interviews to be

Figure 48. View of DkPf-1, Many Spotted Horses medicine wheel, Subgroup 4.

made with individuals who actually participated in or witnessed their creation (Dempsey 1956:177).

Dempsey goes on to note:

> The Blackfoot "medicine wheel" consists of a circle of stone, or "tipi ring" with concentric lines of stone of varying lengths extending away from it in the four cardinal directions. . . . The Blackfoot term for the "medicine wheel" is atsot-akeeh': tuksin. The literal translation is: "from all sides" (atsot) a small marker of stones (akeeh') for posterity (tuksin). It will be noted that the work merely designates the radiating lines and makes no reference to the tipi ring itself. This conforms with Blackfoot tradition that the lines were merely appendages to existing tipi rings, rather than the whole marker being constructed at one time.
>
> According to informants, "medicine wheels" were used to mark the residence or grave of a warrior chief. There were apparently three such allied uses: for a tipi in which a warrior chief died and was buried; one in which he had been residing at the time of his death but which was not his burial place; and one which was used during his lifetime, but not related to his death. Each may be a variation, or they

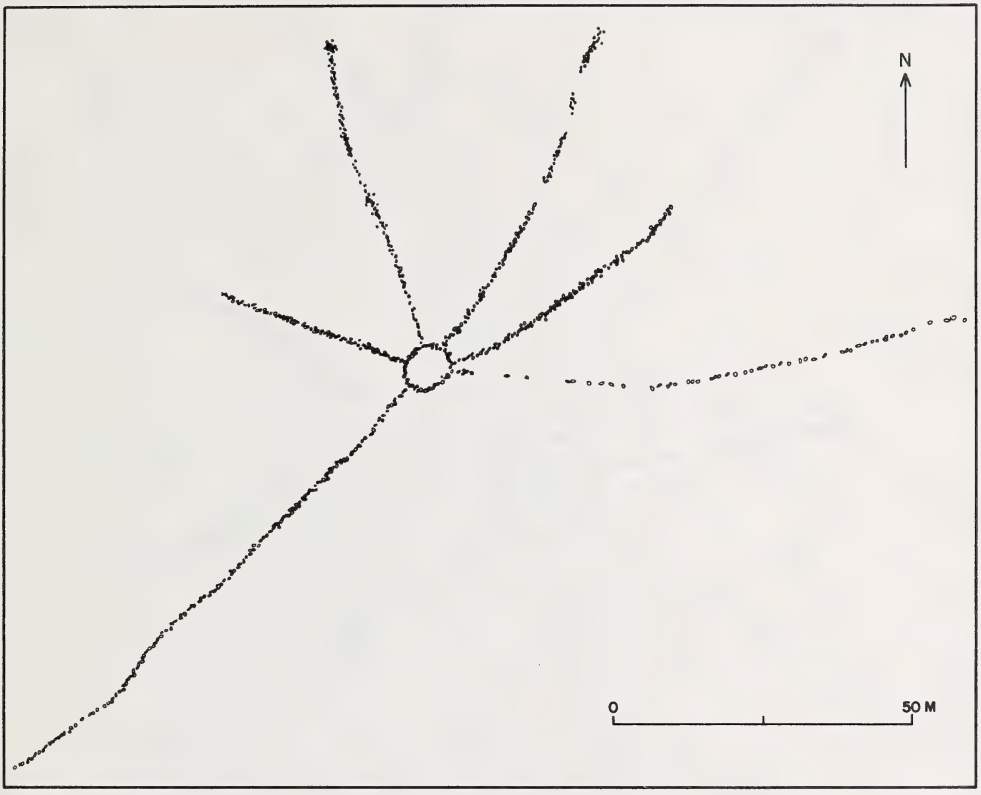


Figure 49. Map of Grassy Lake medicine wheel (DlOv-2), Subgroup 4 (from Walde 1976).

> may reveal a change in the use of these markers over the years (Dempsey 1956:177).

In terms of the age of such structures,

> The earliest reference to a Blackfoot "medicine wheel" known to informants is credited to Bull Back Fat, a Blood chief who died in 1842. But according to Jack Low Horn, a reliable Blood informant who supplied this data, the marker did not originate with this chief but "was started in the days when our people used dogs instead of horses" (Dempsey 1956:177).

Both Kehoe (1954) and Dempsey (1956) document references to construction of several such medicine wheels as memorials to specific individuals by the Blackfoot in recent historic times. In addition, Dempsey (1956) provides detailed descriptions of the events surrounding construction of the Eagle Child (1931) and Steel (1940) medicine wheels, apparently the last such structures to be built.

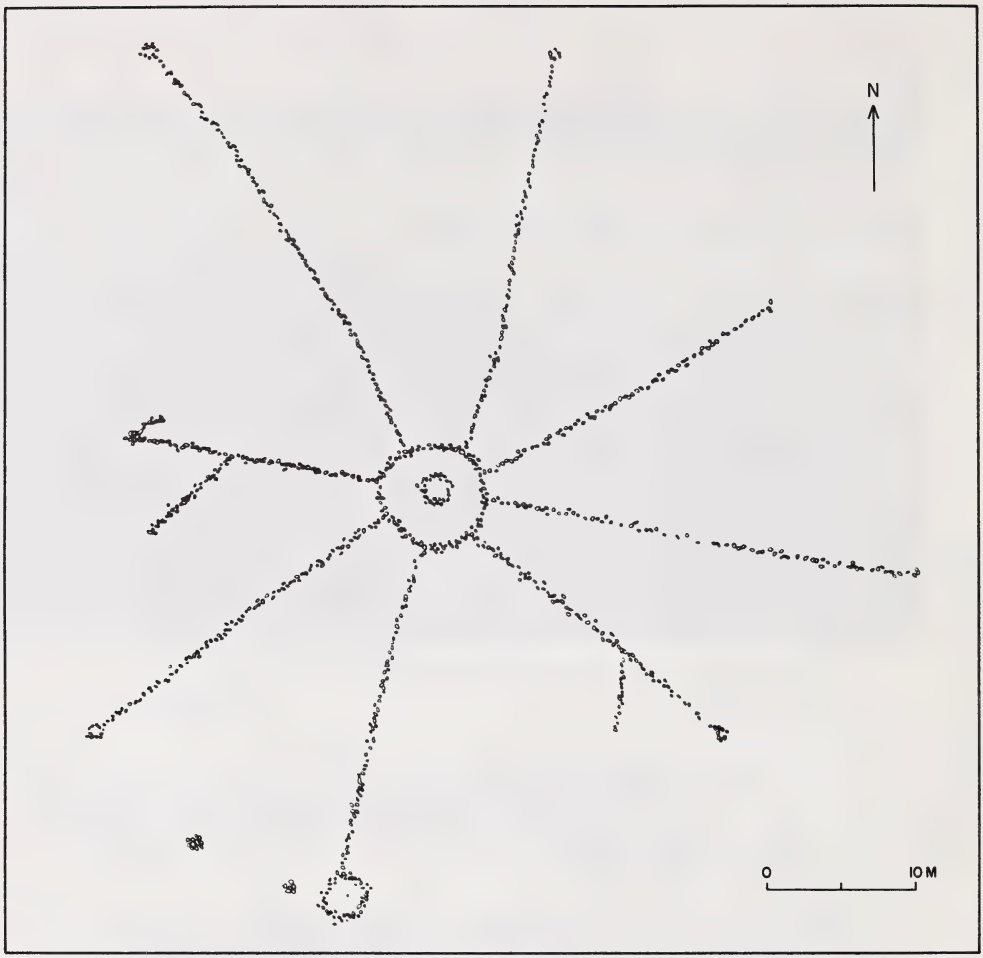


Figure 50. Plan map of EgOx-1, Suitor No. 1, Subgroup 4 medicine wheel (from Walde 1976).

Both Kehoe and Dempsey note some disagreement on the part of their informants as to whether the medicine wheel marked the spot where the warrior chief was buried.

> One Gun stated that "when a chief died, he was left in his tipi. After it had fallen down and rotted, anyone travelling past would know that a chief died there because of the radiating lines." Alternately, Rides at the Door, a Blood informant, said that "any stranger passing such a place would recognize that a chief had died there, but the body would not be left there."
>
> It is possible that these two distinct lines of thought are the result of Blackfoot mortuary customs. At times, particularly during plagues or when moving camp, a dead

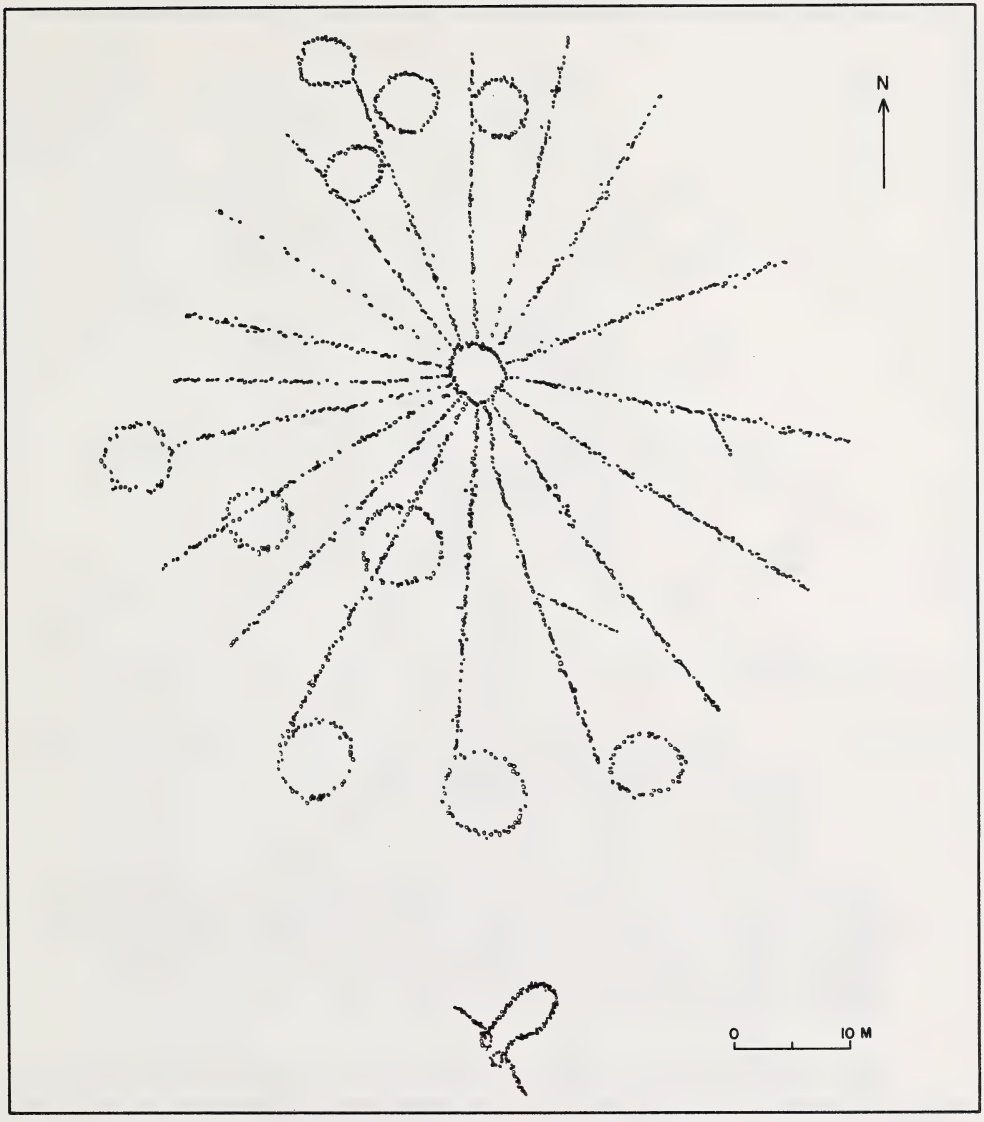


Figure 51. Plan map of EgOx-1, Suitor No. 2, Subgroup 4 medicine wheel (from Walde 1976).

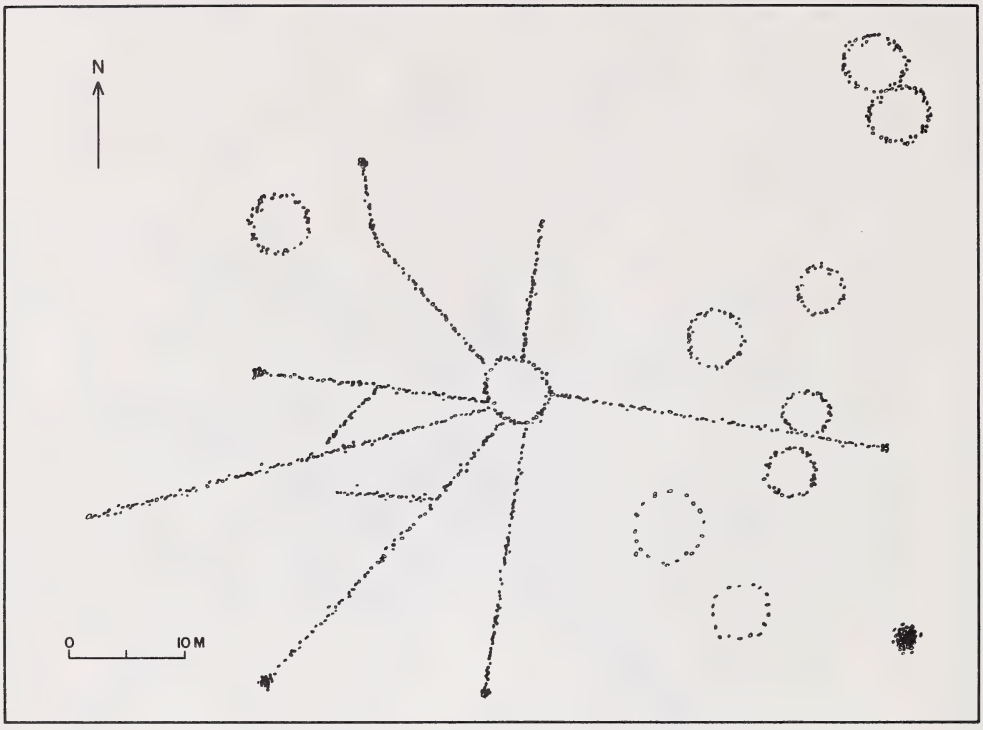


Figure 52. Detailed drawing of Suitor No. 3 (EgOx-1), Subgroup 4 medicine wheel (from Walde 1976).

> person was left in his sewn-up lodge. On other occasions, he was buried in the trees or on a scaffolding on a high hill. This variation possibly affected the use of the "medicine wheel," with the radiating lines being left at the death lodge if it was used, or at the tipi ring if the chief was buried elsewhere (Dempsey 1956:179).

The historic medicine wheels documented by Kehoe (1954, 1972) and Dempsey (1956) are characterized by either four or five radiating stone lines. Informants provided varying responses as to what these stone lines denoted. Laurie Plume, daughter of Steel, told Dempsey the lines on her father's medicine wheel ". . . signify that he was a brave man, a leader who had been to war" (Dempsey 1956:181). Dempsey goes on to note:

> There was one point about "medicine wheels" upon which all informants were in unanimous agreement: the radiating lines had no religious or symbolical significance. The number "four" is a sacred one among the Blackfoot and often occurs in religious ceremonies and traditional tales. But all

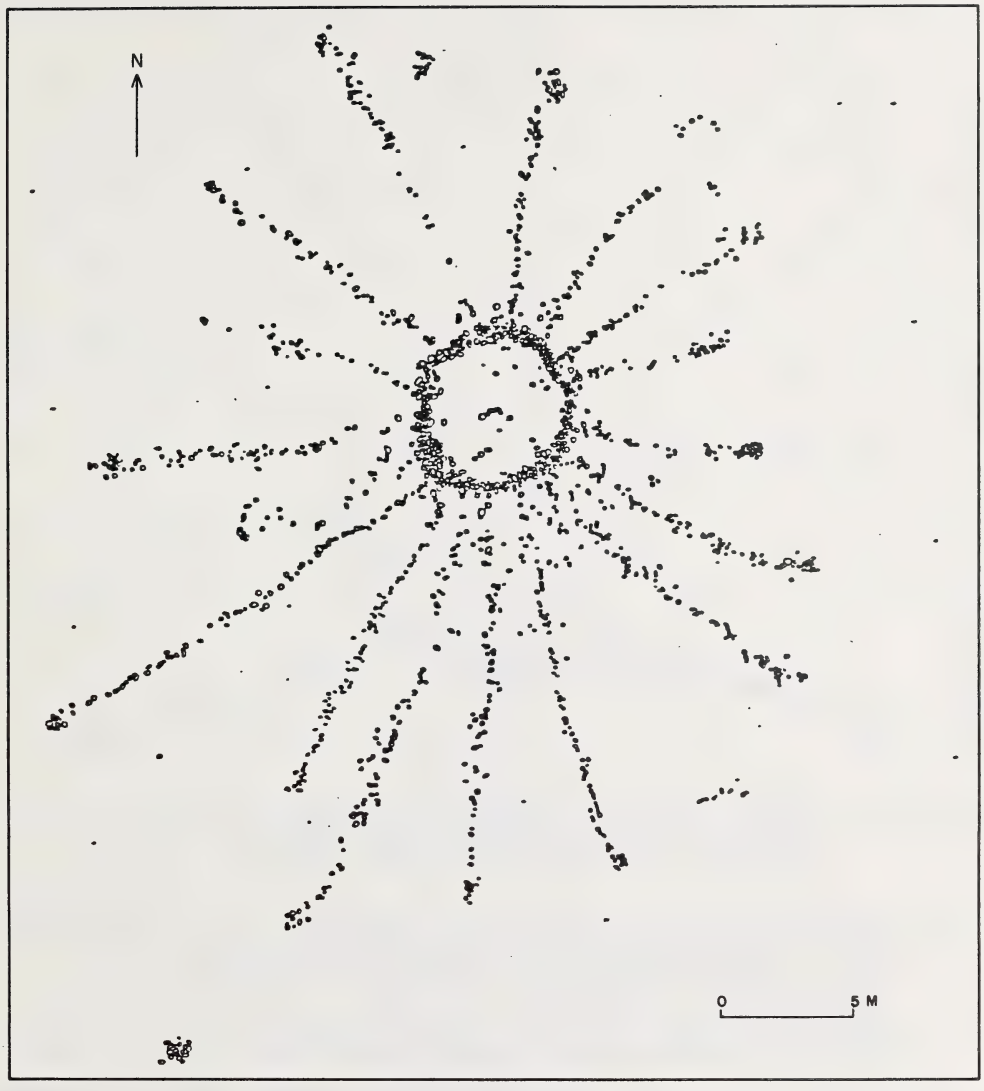


Figure 53. Detailed map of EgOx-46, Hutton medicine wheel, Subgroup 4 (unpublished drawing, Archaeological Society of Alberta 1979).

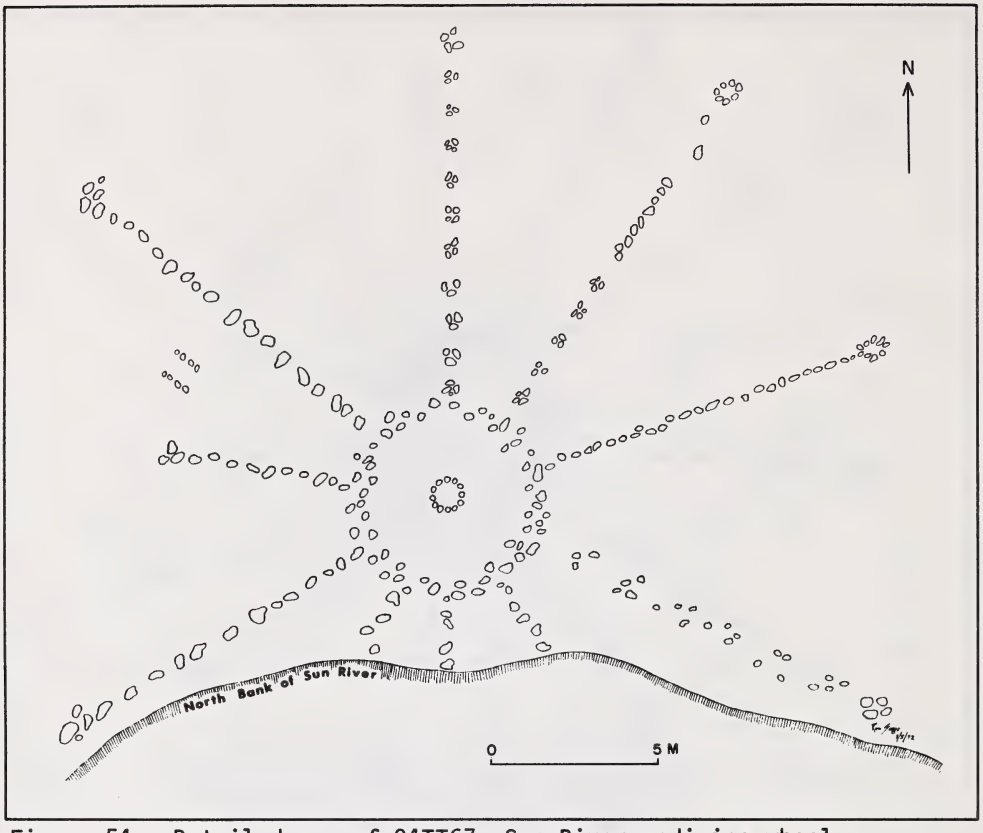


Figure 54. Detailed map of 24TT67, Sun River medicine wheel, Subgroup 4 (from Kehoe and Kehoe 1979:33).

> agreed that no such symbolism applied here or, if it ever had, all knowledge of it is forgotten. The reply of informant Rides at the Door is typical: "There is no symbolic meaning to the four lines; they just denote his status as a warrior chief" (Dempsey 1956:181).

On the other hand, Jim Weasel Tail told Kehoe:

> . . . the lines of rock show the different direction in which they go on the warpath - they were the dead chief's war deeds. If they kill someone, they pile rocks at the end of the rock line. If there is no rock pile present, then they just go to the enemy. Short lines are short trips (Kehoe 1972:184).

The previously quoted reference by Adam White Man stated:

> . . . the rock lines show that everybody went there to get something to eat. He is inviting someone everyday. People went there to live off him (Kehoe 1954:133).

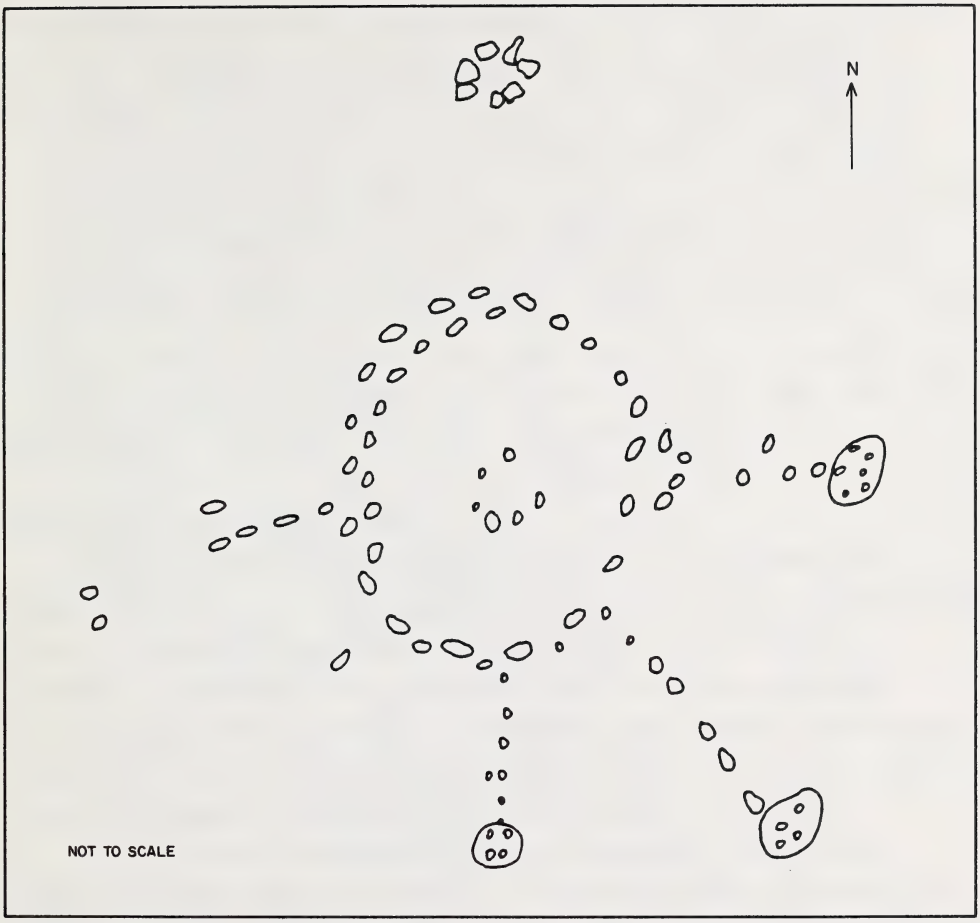


Figure 55. Sketch of 24BH797, Grassy Knoll medicine wheel, Subgroup 4 (from University of North Dakota site form).

Dempsey also provided one reference to use of Subgroup 4 medicine wheels by living Blackfoot warrior chiefs:

> The use of this sign [stone spokes attached to a tipi ring] saved the life of the first Bull Back Fat. The Bloods had been on a raiding party to the south and were returning home. In each camp, Bull Back Fat used these signs around his lodge. A party of enemy Crows discovered one of these camps and saw his marks. They had never seen them before and wondered what they meant, so they began to follow the trail of the Bloods. They found two deserted camps and arrived at the third shortly after the Bloods had left. Bull Back Fat and his wife were a few miles from this camp when they discovered that a colt had been left behind, so they returned to find it. When they came to a point overlooking the camp,

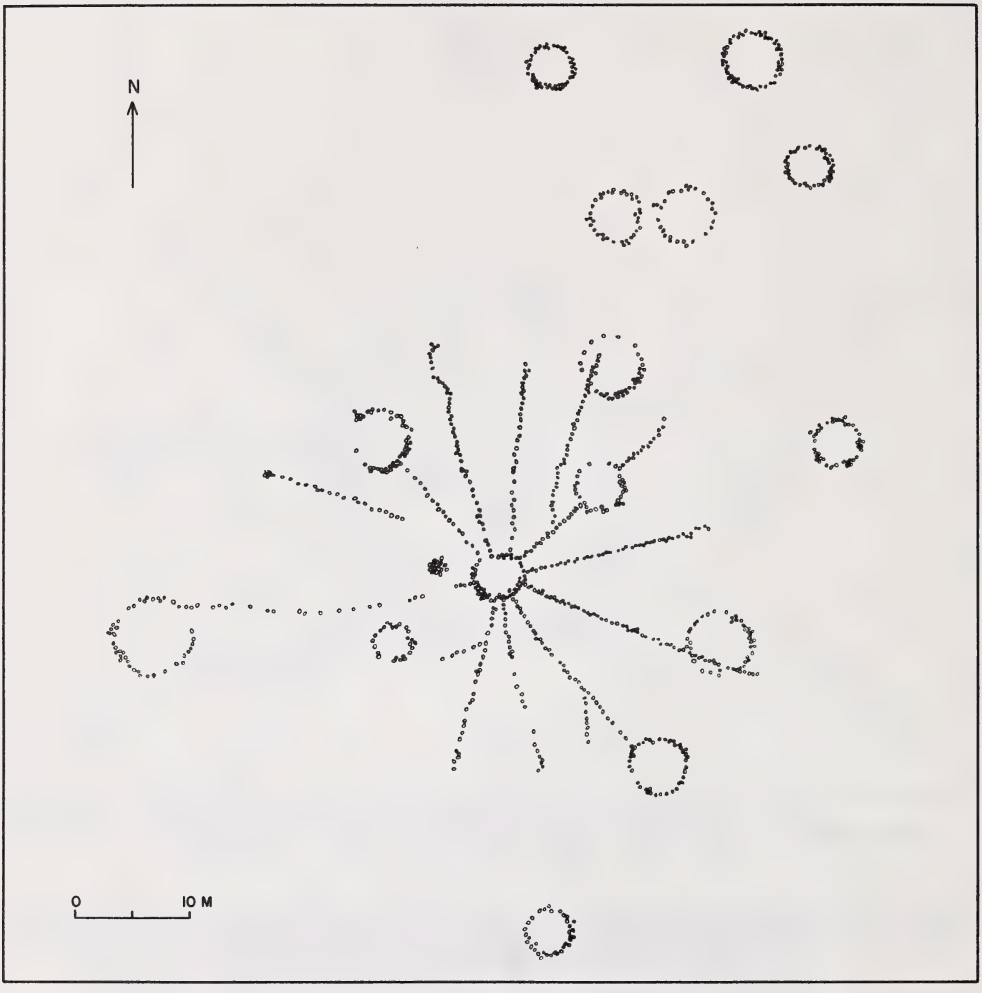


Figure 56. Detailed map of Ellis medicine wheel (EcOp-4), Subgroup 4 (from Walde 1976).

the Crows saw the pair and waved to them. Escape was impossible, so Bull Back Fat rode down to meet them. Speaking in sign language, the Crows asked about the meaning of the stones. Bull Back Fat explained that these were used by a great warrior chief who was leading the party of Bloods; but he did not tell them that he was the chief. They became anxious to visit this man and Bull Back Fat agreed to lead them there under a pact of peace, but asked that his people have time to be prepared. He left the Crows and found the new camp where his lodge was placed in readiness for the visitors. When the party arrived, they were shown to Bull Back Fat's tipi. When they entered, they were surprised to meet the same man whom they had seen earlier. It was then

> they learned who he was and realized they had missed the opportunity to kill a great chief. . . .
>
> According to the informant, other tribes soon learned the meaning of the "medicine wheel" and it served a practical purpose, for the enemy was always hesitant about pursuing a camp which was lead by a noted warrior. "Anyone passing one of these markers would know that a great warrior chief had camped there," he commented.
>
> If this at one point was the common Blackfoot use of the "medicine wheel," it evidently underwent a change in the late nomadic period, for most modern informants consider these to be solely memorials or death markers (Dempsey 1956:177).

This reference is valuable, not only for indicating an alternate function for Subgroup 4 structures, but for indicating that other tribal groups - at least the Crow - were unacquainted with it.

Archaeological Evidence

The Grassy Lake medicine wheel (Figure 49) is located in the immediate vicinity of, and is possibly associated with, the Grassy Lake cairn, a prominent stone feature approximately 6 m in diameter. Although it was largely destroyed by vandalism, Forbis conducted salvage excavations at the cairn and noted human remains were reported to have been found there. Based on several lines of evidence, Forbis (1960:158) suggests a date of 1700-1750 A.D. for the cairn.

The Ellis medicine wheel is the only excavated and reported Subgroup 4 site (Figures 56 and 57). Test excavations carried out in 1974 within and immediately outside the medicine wheel resulted in the discovery of scattered human skeletal elements and the decomposed remains of a painted wooden stake near ring centre. A sample of material from the wooden stake yielded a radiocarbon date of 450 $\pm$ 160 years B.P. (Beta 8948; Brumley 1985:204). Limited test excavations within and between other tipi rings at the site produced a limited sample of projectile points all suggestive of a late prehistoric age. In interpreting data from the Ellis site, Brumley draws heavily on the ethnographic data provided by Dempsey (1956), Kehoe (1954), Ewers (1955) and others to conclude:

> The similarities between the Ellis medicine wheel and the ethnographic accounts of Blackfoot memorials to warrior chiefs, and Plains Indian death lodges, are striking and irrefutable.

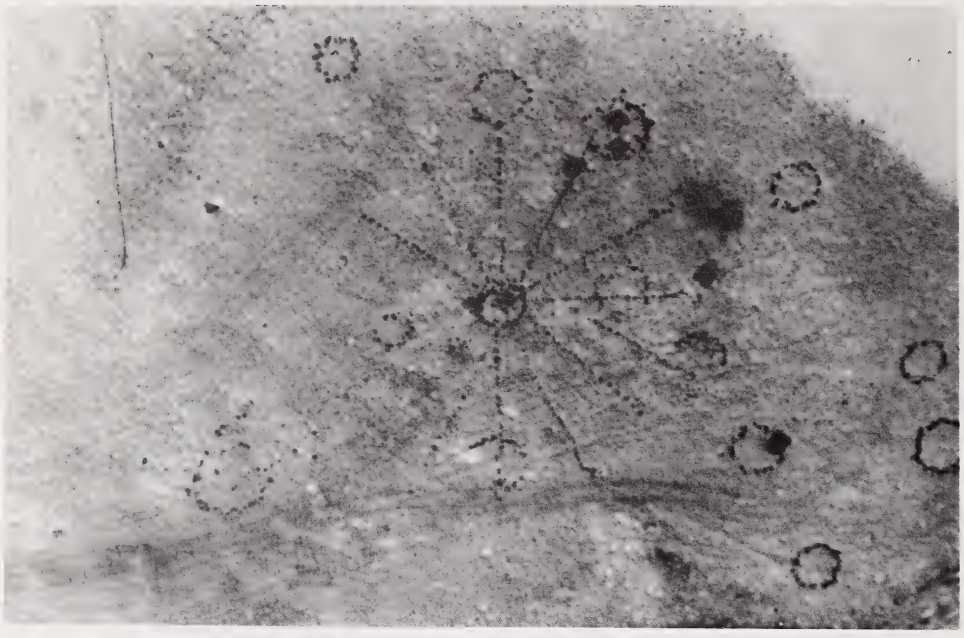


Figure 57. Aerial view of EcOp-4, Ellis site, Subgroup 4 medicine wheel.

The analogues provided by these accounts appears to be specific rather than generalized in nature.

The central ring of the Ellis medicine wheel is simply a tipi ring which was used to secure the cover of a burial lodge. The stone spokes were attached to the central ring as a mark of respect and honor to indicate that the deceased was a renowned warrior. The painted wooden stake located just southwest of ring centre probably represents a wooden tie-down stake used to secure a rope looped around the apex of poles atop the lodge. The fact that it was painted may simply indicate that such items were well made and used repeatedly or curated until broken and, as such were decorated for adornment. . . .

Four lines of evidence indicate that the lodge was oriented with its doorway to the northeast. First, lodges were commonly situated with their doorway facing away from the prevailing wind. Prevailing winds in the site area are from the southwest. Secondly, ethnographic accounts indicate that, for most Plains groups, the place of honor was opposite the doorway. The aforementioned accounts of death lodge burials indicate that this place of honor is where the body would most likely be placed. The majority of skeletal elements at the Ellis site were found southwest of ring centre. Thirdly, ethnographic accounts indicate that the floor plan of the Plains tipi was in fact oval to egg shaped in outline, with its long axis running through the doorway.

The inside diameter long axis orientation for the Ellis wheel is NE to SW. Finally, historic statements regarding the location of interior tie-down stakes indicate that they were located in the centre of the lodge, or near the centre, offset toward the direction of prevailing winds. The painted wooden stake at the Ellis site, interpreted as such a tie-down, was located southwest of centre. . . .

The radiocarbon date on the painted wooden post fragments from the medicine wheel suggests a MASCA corrected date of A.D. 1430 + 160 (A.D. 1270 to A.D. 1590) for the medicine wheel and burial. Attempts to relate prehistoric cultural remains to specific historic tribal groups are fraught with difficulties and potential pit falls. Forbis (1963) has reviewed the various approached developed to attempt such efforts and some of the problems associated with each. Although I fully appreciate Forbis' concerns, the evidence presented in this paper strongly supports the conclusion that the Ellis site, together with most other Subgroup 4 medicine wheels, was constructed by the historic and prehistoric Blackfoot. Three lines of evidence support this conclusion:

1. Death lodge burial was practiced by a number of Plains Indian groups. However, the practice appears to be most common among Blackfoot.
2. The Blackfoot are the only group known to add stone lines onto to the tipi ring of a death lodge (forming Subgroup 4 medicine wheels) as a sign of respect to honor a prominent warrior or for any other reason.
3. Fourteen of the 17 Subgroup 4 medicine wheels, including the Ellis wheel, are situated within the historic territory of the Blackfoot. Of the three structures falling outside this range, two exhibit structural differences in their central ring, indicating that they probably do not represent tipi rings. The central ring of the Fort Smith medicine wheel has a diameter of approximately 1 m. The central ring of the Wilson Russel wheel has ring walls varying from 1.25 to 1.75 m in width. The remaining structure, the Grassy Knoll wheel, is too poorly documented to even be sure it is a medicine wheel (Brumley 1985:223-226).

SUBGROUP 5 MEDICINE WHEELS

Subgroup 5 structures are characterized by a stone ring dissected into segments by four or more interior stone lines radiating outward from a central origin point and terminating at the stone circle wall. No prominent central stone cairn is present. Only two (3%) of the 67 medicine wheels fit the Subgroup 5 definition (Table 10). The Jamieson's Place wheel is located along the Bow River in south central

Alberta. The Belle Creek wheel is located in the Power River basin of southeastern Montana (Figure 58).

PHYSIOGRAPHIC AND TOPOGRAPHIC SETTING

The Jamieson's Place wheel is situated on a terrace surface in the Bow River valley. The Belle Creek wheel is situated atop a prominent rise in open prairie grassland.

METRIC AND NON-METRIC CHARACTERISTICS

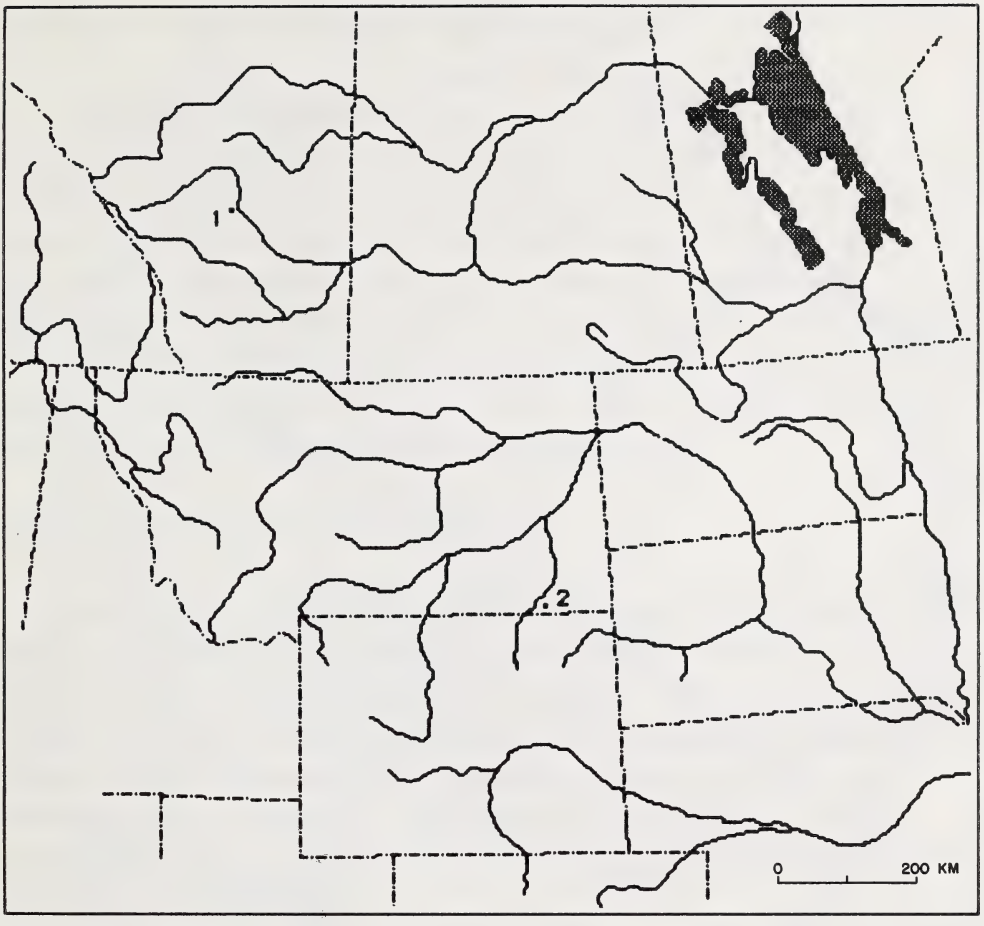
Stone ring diameter for the Jamieson's Place and Belle Creek wheels are 24 and 10 m, respectively (Table 11). The number of stone spokes are four and six, again respectively. The four spokes within the Jamieson's Place wheel appear to terminate just short of ring centre in the map by Walde (1976; see Figure 59). However, Thorpe (1982:20) states that the structure originally had a small, central cairn recently vandalized. If so, the wheel should be redefined as a Subgroup 6 structure.

ANCILLARY FEATURES

No interior ancillary features are found at either wheel. It is not known if any associated features are present at the Jamieson's Place site. At the Belle Creek site, unclear reference is made to several features in the vicinity of the wheel.

FEATURE CONDITION AND RESEARCH STATUS

According to Thorpe (1982), a small, central cairn was originally present in the centre of the Jamieson's Place wheel which as been vandalized. The Belle Creek site is apparently undisturbed. Detailed mapping is available for the Jamieson's Place site. No maps are available for the Belle Creek site. Neither site has been excavated.



1 - EePi-2 Jamieson's Place 2 - 24PR881 Belle Creek

Figure 58. Distribution of Subgroup 5 medicine wheels.

EVIDENCE RELATING TO CONSTRUCTION AND USE

Ethnographic Evidence

No ethnographic evidence relating to construction or use of Subgroup 5 structures was noted.

Archaeological Evidence

No archaeological evidence is available for Subgroup 5.

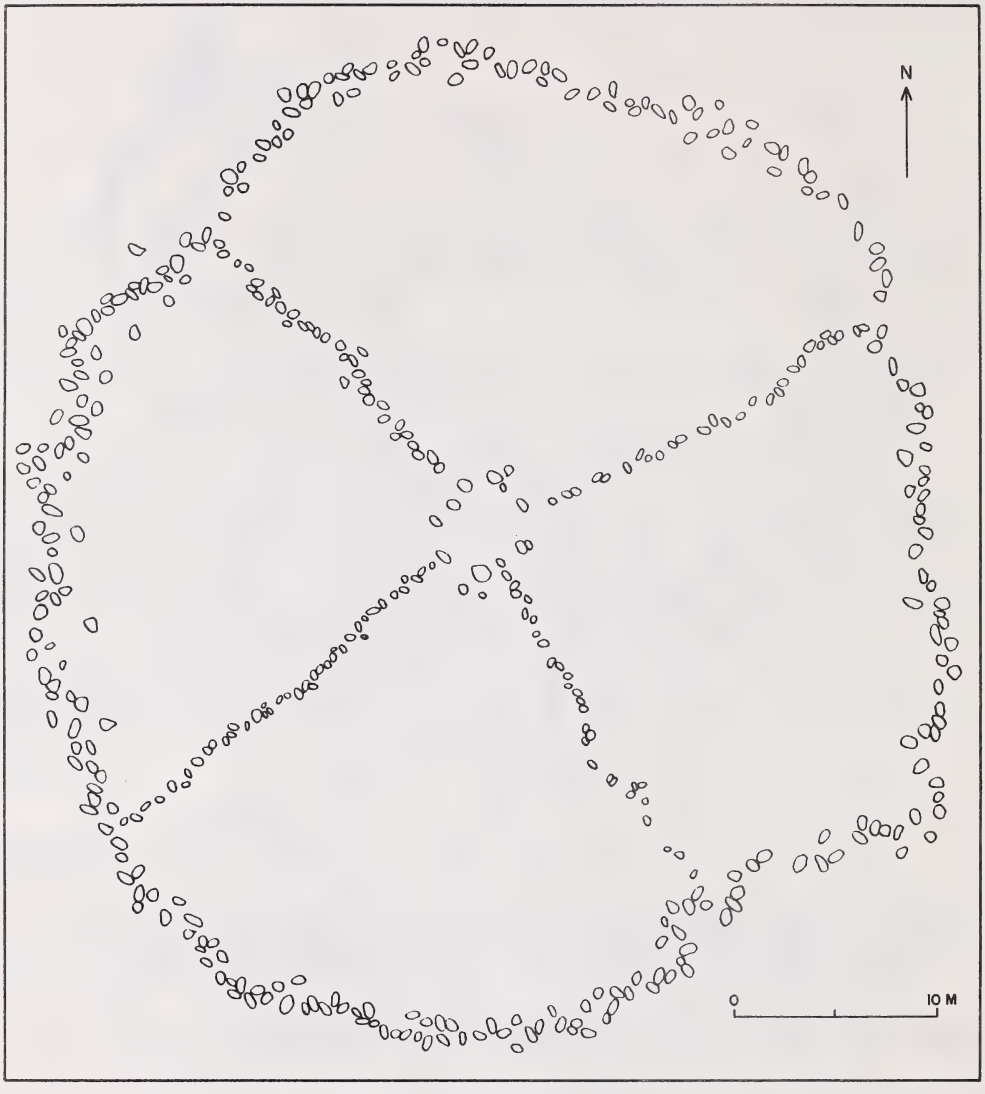


Figure 59. Plan map of EePi-2, Jamieson's Place medicine wheel, Subgroup 5 (from Walde 1976).

SUBGROUP 6 MEDICINE WHEELS

Subgroup 6 medicine wheels are characterized by a prominent central stone cairn surrounded by a stone ring with two or more interior stone lines connecting the central cairn to the surrounding stone ring. Three (4%) of the total medicine wheel samples are referrable to Subgroup 6 (Table 12). These are the Majorville, Jennings and Bighorn medicine wheels. Majorville is situated along the Bow River in south central Alberta; the Bighorn medicine wheel is located in the Bighorn Mountains of north central Wyoming; and the Jennings site is in central South Dakota (Figure 60).

PHYSIOGRAPHIC AND TOPOGRAPHIC SETTING

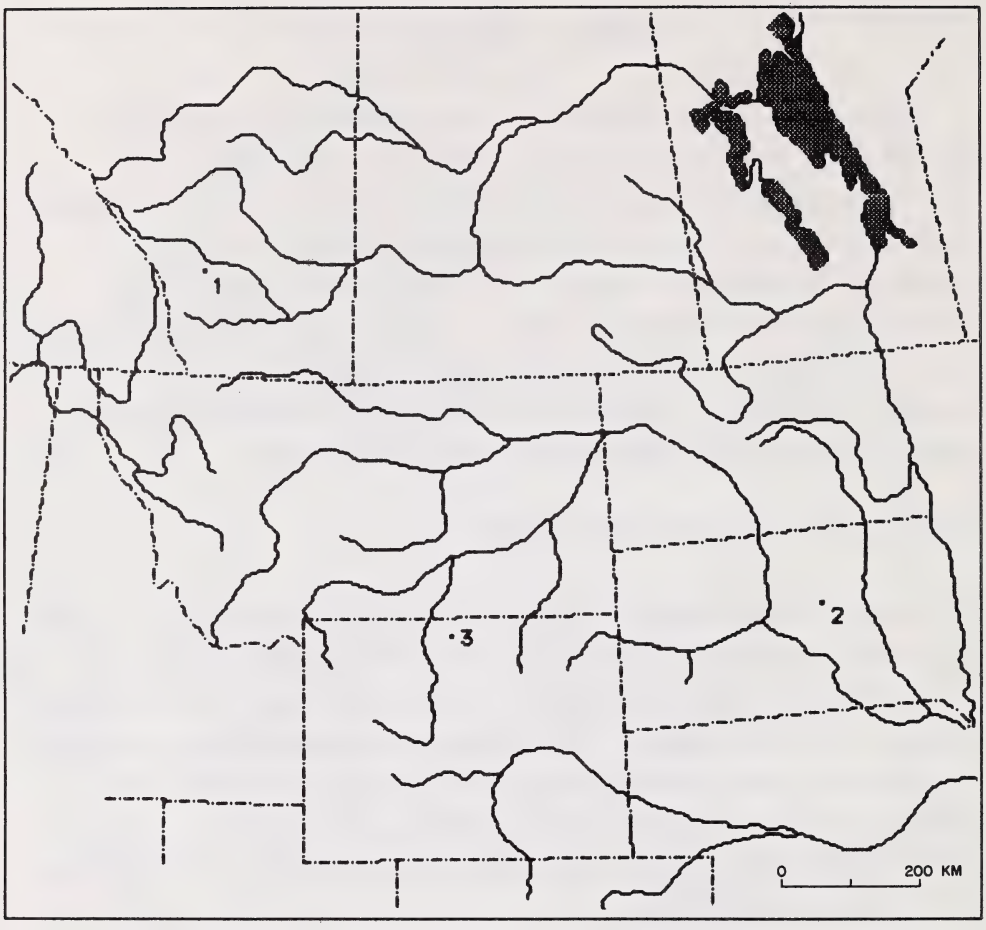
The Majorville wheel is situated atop a high hill on the prairie surface overlooking the valley of the Bow River. The Bighorn wheel is "on the slightly sloping surface of a limestone ridge on the northwest flank of Medicine Mountain. A sheer precipice perhaps 150 feet high, lies about 20 yards west of the structure" (Grey 1963:30). The Jennings wheel is located in open rolling prairie country, approximately 270 m east of a dry lake bed (Abbott et al. 1982; Rood and Overholster-Rood 1983).

METRIC AND NON-METRIC CHARACTERISTICS

The Jennings medicine wheel consists of a 6 m diameter stone ring in the centre of which is a low-lying stone cairn 2.5 m in diameter (Table 13). Connecting the cairn with the surrounding stone ring are four stone lines which are almost equidistantly spaced. No ancillary features were noted (Abbott et al. 1982).

Grey (1963) described the Bighorn wheel as:

> . . . a roughly circular pattern of stones laid upon the surface of the ground. In the center of the pattern is a hollow oval cairn of rock from which 28 radial lines extend to a peripheral circle. Around and near the peripheral circle are located 6 more cairns. Five of these are exterior to the main circle, while one is mostly interior. One of the



1 - EdPc-1 Majorville
2 - 39HD22 Jennings
3 - 48BH302 Bighorn

Figure 60. Distribution of Subgroup 6 medicine wheels.

> external cairns is removed from the peripheral circle about 12 feet along an extension of one of the radial lines. Each of the cairns is hollow, and is in reality a more or less heavily walled circle of small size.
>
> The peripheral circle and radial lines consist of single courses of stone for the most part, while the cairns are generally several courses in height. On the east side of the peripheral circle there is a slight break in the lines of stones (Grey 1963:30, 32).

The cairns around and near the peripheral circle of the Bighorn wheel are considered here to be ancillary features (Figure 61). The stone circle has a diameter of 25 m, and the central cairn has a diameter of 4 m.

The Majorville medicine wheel consists of a 27 m diameter stone ring, in the center of which is a stone cairn 9 m in diameter and 1.6 m high (Figures 62 and 63). Approximately 27 badly disturbed stone lines extend inward from the surrounding ring towards the central cairn. The stone lines are moderately to extensively disturbed, making an exact count impossible (Calder 1977).

ANCILLARY FEATURES

The six cairns located along and immediately outside the stone circle of the Bighorn medicine wheel are considered here to be ancillary features. As Grey (1963:32) notes, these cairns are more or less heavily walled arcs of stone. Early photographs and accounts indicate that a rock slab roof or covering over at least one cairn. All these cairns have openings of varying orientation. Apparently, other features were originally located outside and in the vicinity of the Bighorn wheel (see Grey 1963:32; Hunter and Fries 1986:7); however, subsequent disturbance has apparently removed many of these, and tourists have created new structures over the years.

At Majorville, the area between the central cairn and surrounding stone circle has been disturbed to some extent. Several small clusters of stones were noted between the central cairn and stone circle which could represent portions of scattered stone spokes or small ancillary cairns. Two tipi rings are located immediately east of the medicine

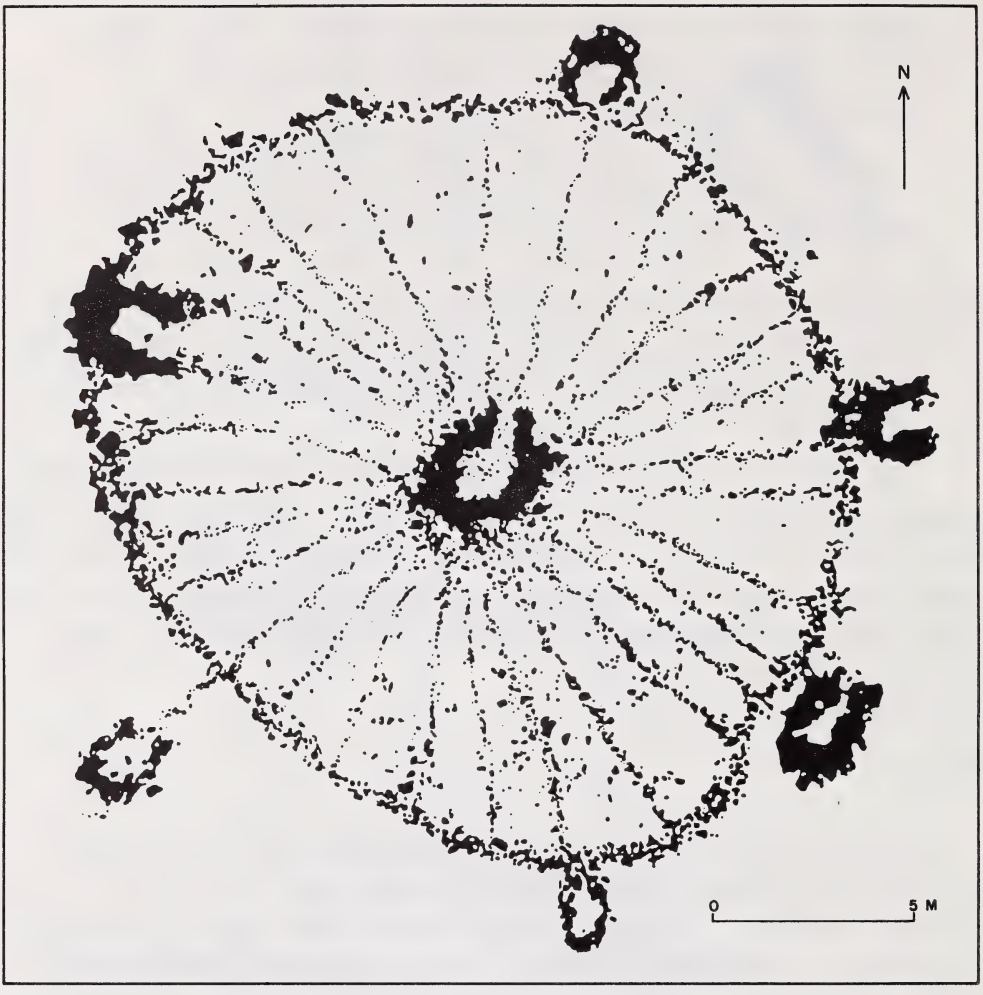


Figure 61. Plan map of 48BH302, Bighorn medicine wheel, Subgroup 6 (from Grey 1963:29).

wheel (Calder 1977). No ancillary features were apparently present at the Jennings wheel (Figure 64).

FEATURE CONDITION AND RESEARCH STATUS

The Jennings medicine wheel appears to be undisturbed and has not been excavated. The area within the stone circle of the Majorville cairn is partially disturbed, resulting in damage to many of the stone

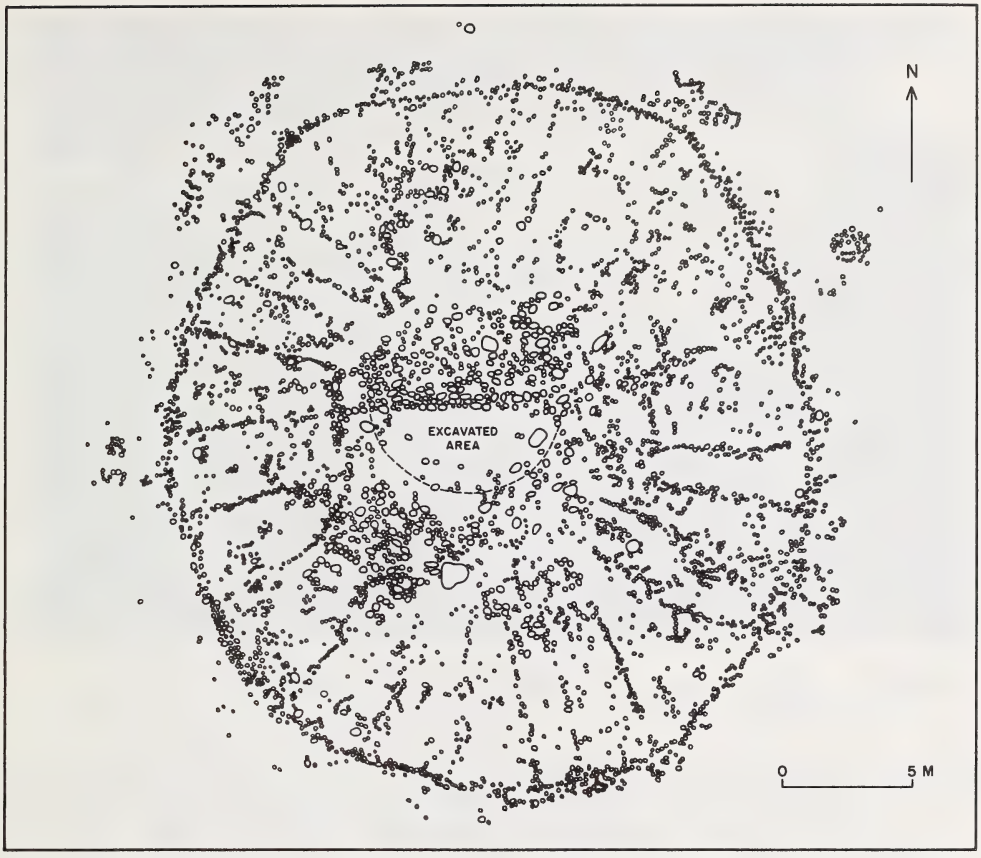


Figure 62. Plan map of EdPc-1, Majorville, Subgroup 6 medicine wheel (from Calder 1977:218).

spokes. The south half of the cairn was completely excavated and is reported on by Calder (1977).

The Bighorn wheel, including the ancillary cairns along and immediately outside the wheel, has remained relatively intact. The interior of the central cairn was apparently vandalized. As well, the various cairns appear to have deteriorated to varying extents since initial discovery. The area surrounding the Bighorn wheel has apparently been highly disturbed. Extensive excavation and mapping were carried out in 1958 and in 1973. This work is reported in part by Grey (1963) and Wilson (1976, 1981).

Figure 63. Aerial view of EdPc-1, Majorville, Subgroup 6 medicine wheel.

EVIDENCE RELATING TO CONSTRUCTION AND USE

Ethnographic Evidence

No ethnographic evidence was noted regarding either the Jennings or Majorville medicine wheels. Several accounts are available for the Bighorn medicine wheel which attribute its construction and use variously to the Shoshoni, Crow, Cheyenne and Kiowa. W. A. Allen (1913) records an account regarding the Bighorn wheel told to him in sign language by an old woman said to be the last of the "Sheepeaters," a group of Shoshoni.

> Never having been taught differently, they believed in gods, chief of which was the sun, and consecrated their lives to them; and their eternal happiness will be complete in the great Happy Region where all is bright and warm. The great wheel, or shrine of this people is eighty feet across the face, and has twenty-eight spokes, representing the twenty-eight tribes of their race. At the center or hub there is a house of stone, where Red Eagle held the position of chief or leader of all the tribes. Facing the northeast was the house of the god of plenty, and on the southeast

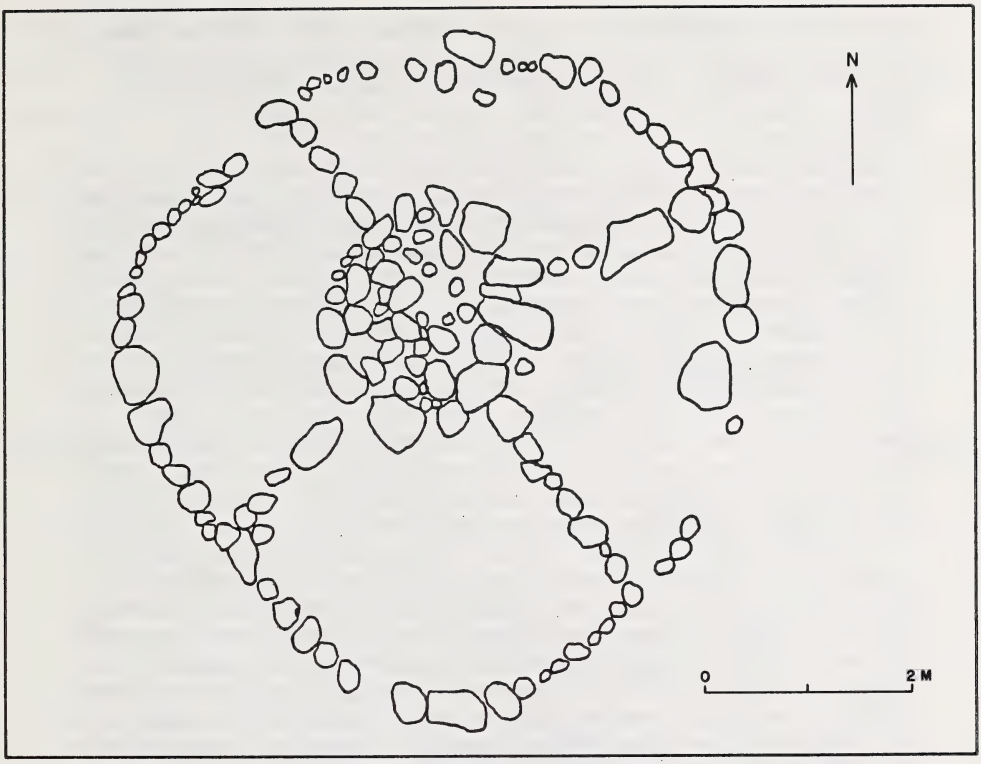


Figure 64. Plan sketch map of 39HD22, Jennings site, Subgroup 6 medicine wheel (from Rood and Overholster-Rood 1983).

> faced the house of the goddess of beauty; and due west was the beautifully built granite cave dedicated to the sun god, and from this position the services were supposed to be directed by him. Standing along the twenty-eight spokes were the worshippers, chanting their songs of praise to the heavens, while their sun dial on earth was a true copy of the sun (Allen 1913:9-10 from Wilson 1981:349).

Grinnell examined the Bighorn wheel in 1922. He dismissed Allen's account and concluded that the Bighorn wheel was constructed by the Cheyenne.

> A little book entitled The Sheep Eaters, which reads like fiction, states that the Medicine Wheel was built by the Sheep Eaters, and that the twenty-eight so-called spokes represent the twenty-eight tribes of the Sheep Eaters.
>
> Among the older Cheyennes the existence of the Medicine Wheel is well known. Some of them tell of one or more similar constructions, or of pictures on cliffs perhaps made in limitation of it.

> I have discussed the Medicine Wheel with old Cheyennes, and particularly with Elk River, who probably was born about 1810-12. He was a man of good intelligence, of excellent memory, and of high character. He was extremely well informed as to all tribal customs and traditions . . .
>
> Years ago, when I showed to Elk River, Mr. Simms's figure of the Medicine Wheel, he said at once that it was the plan of an old time Cheyenne Medicine Lodge. The outer circle of stones he said represented the wall of the Medicine Lodge; the lines leading toward the center, the rafters - or, as he called them, the lodge poles - of the Medicine Lodge; and the small circle in the center of the large one, from which the so-called spokes radiate, represented the center pole of the Medicine Lodge. He added that the building to the northwest of the entrance, and within the circle and touching it, was the place from which the thunder came; and by this I understood him to mean what I call the alter - the place in the Cheyenne Medicine Lodge which is especially sacred, and in which is the buffalo skull.
>
> The position of the stones, the outside circle, the inner circle, and the radiating spokes and the inside construction which touches the wall on the northwest of the circle, suggest at once, to anyone who has ever attended and observed that ceremony, a ground plan of the Cheyenne Medicine Lodge. As Elk River said, the outside circle of the stones seems to represent the walls of the Medicine Lodge, the inner circle, the centre pole, and the so-called spokes of the wheel, the rafters of the roof, which run from the fork in the center pole to the supporting cross-pieces of the wooden framework which forms the wall of the Medicine Lodge. The position of the alter confirms the other points. If we imagine the Medicine Wheel to be the ground plan of the Cheyenne Medicine Lodge, the oval construction to the west and connected with the large circle by a line of stones occupies approximately the place of the "lonely" lodge where the instruction is given to the Medicine Lodge makers and from which the Cheyenne Medicine Lodge women carry the buffalo skull down to the Medicine Lodge which is in process of being built (Grinnell 1922:307-309).

Hunter and Fries (1986) and Wilson (1976, 1981) document several accounts relating to the Bighorn medicine wheel in Crow mythology and oral history. Some accounts tell of vision quests at or in the immediate vicinity of the wheel.

Archaeological Evidence

No archaeological evidence is available for the Jennings site. Calder (1977) provides a detailed description and analysis on research conducted at the Majorville site, involving airphoto mapping of the

entire wheel and excavation of the entire south half of the central cairn. Some 17,000 pieces of cultural material were recovered. Calder observes:

> The basic assumption in excavating the cairn was that it had been built as a series of accretional domes. Layers were, therefore, removed from the surface toward the centre. Analyses of artifacts, specifically trade goods, projectile points and obsidian, show the arbitrary layers to be distinguishable culturally. Analysis suggests strongly that the cairn was not only accretional, but also that it was erected over a long period of tine, perhaps 5,000 years, its use ending with the historic period (Calder 1977:201).

In discussing construction and use episodes of the cairn, Calder notes:

> From analysis, it appears that a new cultural practice was introduced into the Plains during the Oxbow Complex [3200 - 2500 B.C.] . . .
>
> The tradition appears to have been maintained through subsequent cairn construction and the accumulation of artifacts, until ca. 1000 B.C., the beginning of the Pelican Lake Phase. During the interval 3200 - 1000 B.C., use and construction of the cairn seems to be fairly uniform through time with more or less equal representations of Oxbow, McKean and Duncan-Hanna Phases. From ca. 1000 B.C. to A.D. 200 there appears to be a considerable decline in cairn use.
>
> At approximately A.D. 200, there appears to be revival in the use of the cairn. Judging from the number of Late Prehistoric Period artifacts found in the cairn, there was an increase in cairn use at this time, relative to the Oxbow Hanna interval (Calder 1977:202-203).

In regard to the surrounding ring of stones and stone lines, he notes:

> There is no way of demonstrating that any period of the cairn corresponds to the construction of the medicine wheel. However, as was the case with the cairn, the wheel may have been maintained for five millenia. There is no evidence to the contrary (Calder 1977:205-206).

Other than two small, widely separated and isolated human skeletal elements, there is no evidence to suggest the cairn was used for human burial. In regard to the recovered artifact assemblage, Calder notes:

> Aside from the physical attributes of the site itself, the artifact inventory suggests ceremonial functions. Although the cairn contained a wide array of artifacts covering the wide spectrum of tool types, amulets and debitage, the presence of such non-utilitarian objects as iniskims, fossils and concretions and the extensive red ochre staining on

artifacts and bone are indicative of a ceremonial function of some nature. There is some suggestion in artifact provenience that artifacts may have been deposited in small groups confined to small areas or pockets. This fact, in conjunction with the presence in the cairn of bird bones, indicates that medicine bundles may have been deposited in the cairn.

Although ceremonial objects were located in the cairn, a large inventory of utilitarian artifacts was present. These cover the complete range of tools required for a subsistence lifestyle - hide and food preparation, tool manufacture and craftsmen's work (drills, engravers, bone tools, etc.), plus cores, flakes and projectile points. They include used as well as apparently unused specimens. Tools are of excellent to poor quality. Many were undamaged and many were fragmented. This suggests that valuable utilitarian possessions on which day to day subsistence depended were offered as well as objects of more specifically ceremonial use. The abundance of cores and lithic debitage present at the cairn suggests that, in addition to deposition of tools in use at the time or previously, some artifacts were made at the site, perhaps both for deposition and use elsewhere.

Utilitarian tool types correspond roughly to those at other Plains sites. However, the relatively high frequency of projectile points (17 percent of total artifact inventory), suggests ceremonial significance of the cairn associated with the hunting or procuring of bison as food. The question of the relevance of the large number of broken points (7 percent of the inventory) which constitute about half the number of points remains unknown.

The extremely fragmented state of the faunal remains in the cairn, with few partially complete elements, is difficult to explain. They are not suggestive of food procurement. Rather they are more indicative of token offerings or burials, bones possible having religious significance related to food abundance or to the hunt, particularly in light of the amount of red ochre present artificially on bones. Bone tools were recovered in large numbers, suggesting that the fragments may have resulted from bone tool production. Some may be unrecognizable bone tools.

Cultural materials found in the cairn may be solely related to the ceremonial function of the cairn or may represent a combination of ceremonial activities with normal daily routine tasks, such as tool making and hide preparation that occurred at the site (Calder 1977:204-205).

Regarding the reason for its construction, Calder (1977:206) notes that "the exact function of Majorville remains enigmatic." He goes on to review various theories propounded for the function of medicine wheels in general, and for specific medicine wheel sites, and concludes

that they are either inappropriate for Majorville or that insufficient data were obtained at the site from which to draw a conclusion.

The Wyoming Archaeological Society excavated areas at the Bighorn medicine wheel between a number of the stone spokes and in the open central area of each of the stone cairns (Grey 1963). More limited excavation in areas between two spokes was carried out by Wilson (1981). Grey noted that although excavations produced numerous cultural items, they were all contained within a thin humus zone overlying a limey subsoil. No cultural stratigraphy could be found. Culturally diagnostic materials recovered included 12 potsherds probably referrable to the Intermountain Tradition (Mulloy 1952). Nine glass, brass, ceramic and shell beads - most historic trade items - were recovered from near the central cairn.

In examining the floor within the open interior of the central cairn,

> . . . some fragments of rotted wood were encountered at a depth of about 15 inches and the distal end of a bison metacarpal was found at a depth of about 26 inches. When the interior had been excavated to bedrock, it became apparent that pieces of the slabby limestone bedrock had been removed to form a conical, stepped hole which extended perhaps 2 feet below the surrounding bedrock surface and about 3 1/2 feet below ambient soil level. Although many natural fissures occur in the area, no natural pit approximated the form of this one, and it is undoubtly of human manufacture (Grey 1963:36).

Grey goes on to suggest that this hole and the rotten wood could indicate a wooden pole had been socketed there (Grey 1963:38). Wilson (1981:344-345) argues against the presence of a central pole for number of reasons, including early accounts that the open area of the central cairn had originally been roofed over and that the central open area had been vandalized and dug into in the 1890s.

Within the interior of the western cairn along the stone circle, the Wyoming Society discovered pieces of wood apparently incorporated into its construction.

> When excavation was begun, the interior of the west cairn was filled with rabbitbrush (ribs sp.), and photographs from the early 1920's showed such brush in place at that time. It was hoped that his might have protected the interior from

souvenir hunters for an appreciable length of time. when the brush was removed, it revealed a layer of dead leaves about 7 inches thick, nearly filling the interior of the cairn. When this material was removed, the upper surface of a piece of wood was revealed. The wood was evidently a piece of a limb, and showed a pronounced curve. Upon further excavation one end of the curve was a pinned between the lowest course of stone in the cairn and bedrock. The other end was pinned between the first and second courses of stone. Beyond question, the wood had been incorporated in the cairn at the time of its construction.

A sample of the limb was cut from the central portion, leaving the ends in place as a future control. Other wood samples were obtained from another in-place fragment in the same cairn, and from many of the sounder fragments found on the surface among the stones of the structure. It was hoped that a dendrochronological study might elicit some information about the Medicine Wheel's construction date.

A large number of cores was obtained from living and recently dead trees in the vicinity of the Medicine Wheel, and their rings plotted. Fourteen of these specimens seemed to cross-check well and their rings were averaged to form a master chart for the immediate area. Full-ring plots were used rather that abnormal rings alone. Charts were plotted for the specimens obtained from the structure. The most recent death-date among the specimens found in place in the structure was 1760.

Since the wood fragments incorporated in the structure of the Medicine Wheel were probably picked up as deadfall, it seems reasonable to set the construction date a number of years after 1760, probably not too far from 1800. Some standing stumps with sound limbs found in the area had died as much as 50 years previously, indicating that wood is available in sound condition for some time after its death (Grey 1963:37).

A major contribution of Wilson's 1973 excavation was the discovery that the spokes of the wheel postdate the central cairn and the Bighorn wheel is at least in part accretional.

. . . we selected for excavation a "pie-segment" on the southeast side of the structure [central cairn]. Here, on the lee side of the cairn from prevailing winds, we could see a "bulge" in the loessial carpet deposited at the site. A small pit was also placed in a previously excavated segment, again in the area of the loessial "bulge." Of interest to us was the fact that the spokes clearly travelled in to touch the central cairn, yet the area of deeper loess over which they travelled would seem to have accumulated in the lee of an already existing cairn. The implication was that the cairn was older than the spokes.

> Excavations revealed that the "bulge" was attributable not simply to a thicker carpet of loess, but to the fact that his loess lay atop a buried portion of the cairn. The central cairn extended laterally and downward beneath the loess surface for approximately 40 cm. The spokes, in crossing over the loess carpet to reach the visible periphery of the cairn, actually crossed over a buried portion of the cairn. There can therefore be no doubt that the structure as we see it today is composite; though the precise history of its construction and modification could involve many complexities not yet understood (Wilson 1981:364).

A recently advanced theory regarding the Bighorn medicine wheel in particular, and medicine wheels in general, is that they are astronomically aligned. This argument was first put forward by Eddy (1974).

> Stone alignments such as the Medicine Wheel could have used as horizon markers, to identify the directions of rise or set of selected celestial bodies. A pole stepped vertically in the central cairn could serve as a gnomon or foresight, which, in conjunction with a backsight point at a peripheral cairn, would define the azimuth of rising or setting of some important object. We might first suspect the sun, because of its religious importance in Amerindian culture and its frequent association with the Bighorn Wheel in form, name and legend. The spoked pattern resembles a common sun symbol. A Crow name for the Bighorn Wheel was "the Sun's Tipi", and in one Crow legend "the Sun built it to show us how to build a teepee" (Eddy 1974:1036).

Further,

> It now seems likely that the structure [Bighorn Wheel] was built for calendar purposes -- specifically to mark the summer solstice Sun and certain stars of midsummer down, and that it was last used for this purpose 200 to 700 years ago (Eddy, 1974). A line through the center of the distinctive outlying cairn and the central cairn points to within 1/3" of the place of sunrise at summer solstice, and a similar line from another of the outlying cairns points to sunset on the same day. The place of sunrise is easier to mark than sunset (for reasons of eye fatigue) but the fact that both are marked is interesting and probably significant. It says that were midsummer dawn be clouded, the users had another chance to mark the solstice Sun the same day when it set. . . . The alignments could have been the result of accidental placement, although the odds against chance alignment on sunrise and sunset to the measured accuracy are greater than 4000:1.
>
> Far less certain are alignments suggested for three of the remaining cairns, the central cairn, on three prominent

> stars: Aldebaran in Taurus, Rigel in Orion, and brightest Sirius. These are three of the brightest stars in the sky at the latitude of the Bighorn Mountains, and more significantly, the only bright stars that rise near dawn in the few months of the year when the high altitude site could be occupied. . . . The first of these, Aldebaran, rose heliacally (just before dawn) at the site in roughly 1200 AD, and could have been used for several centuries around that time for a precise check on summer solstice; today at summer solstice it rises unseen in the glare of dawn. The other stars whose alignments are indicated rose heliacally at later intervals of about 28 days (roughly one "moon", and the number of spokes in the medicine wheel) after Aldebaran: first Rigel, then, near summer's end, bright Sirius. Thus six of the seven cairns seem to fit a consistent and practical plan; one, a smaller cairn near the south extremity of the wheel is unexplained, other than as a possible north-south marker, for which it is about 11.5° in error.
>
> The astronomical explanation of the Bighorn Medicine Wheel proposed that it was built and used as a summer solstice marker, for calendar use, and probably for ritual, since the important Sun Dance ceremony was held by some tribes at the time of summer solstice. . . . A precise calendar would not be needed for this purpose, although with the help of the heliacal rising of Aldebaran the medicine wheel could have given an accuracy of several days. Its secrets could have been known but to a few, thus explaining in part why 19th century informants could not offer any use for the structure. The significance of summer solstice to nomadic hunters could have its origin in an earlier era, when some of the Plains peoples had a more agricultural existence.
>
> By this astronomical explanation the cairns are the more important features of the structure, and they may have been built and used first -- perhaps originally just two or three of them for the Sun -- and other cairns and the spokes and rim added later as refinement or simply an embellishment. Recent archaeological investigation has confirmed that the central cairn is much older than the spokes of the wheel (Wilson, 1975). As for its date of use, the Aldebaran alignment suggests possible use for a heliacal solstice marker in the 12th to 14th centuries, although this could be the marks of but one set of users. The solar alignments at the Bighorn site would have been useful for millenia, since the change in the obliquity of the ecliptic is very slow (Eddy 1977a).

Eddy's case for an astronomical alignment of the Bighorn and other medicine wheels has generated both considerable support and opposition. A full review of these arguments is outside the intent and scope of this paper, and the reader is referred to Ovenden and Rodger (1981), Wilson (1981), Fries (1980) and Hunter and Fries (1986) for

further discussions. I think Hunter and Fries rather nicely summarize the current situation concerning these astronomical theories.

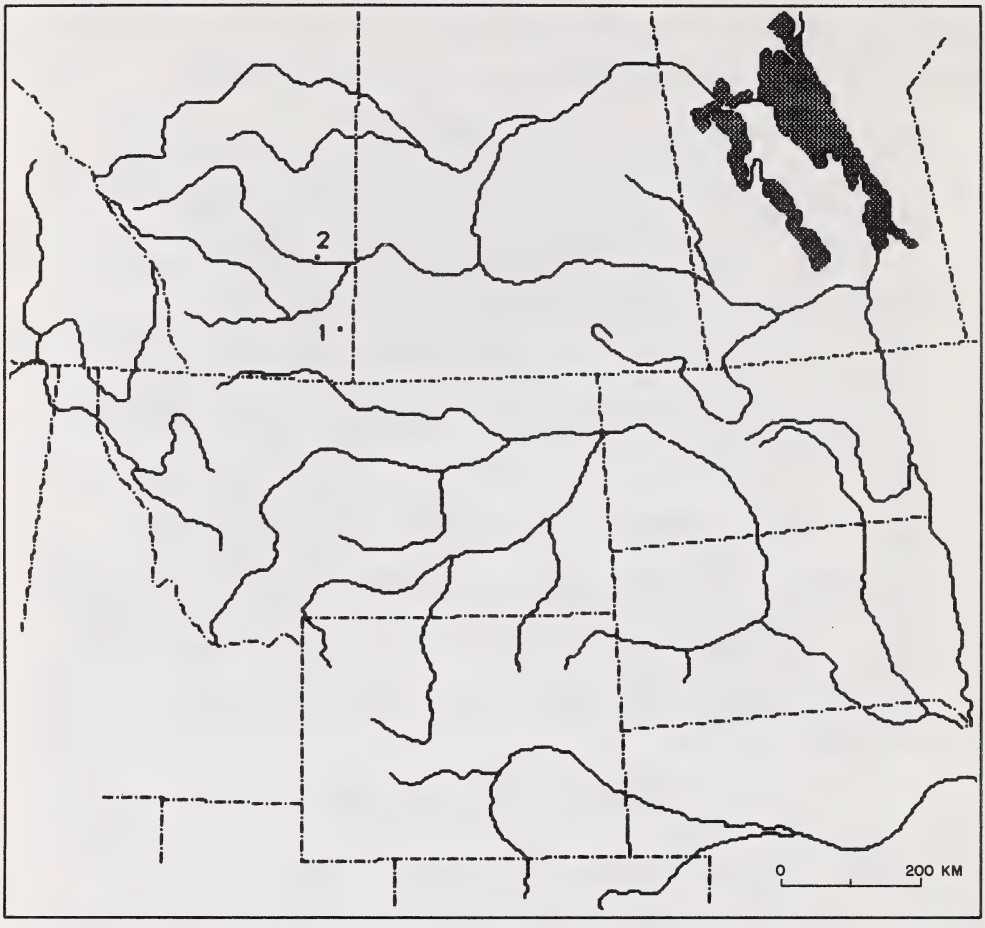
> One of the most controversial subjects in this field is the alignment of archaeological features, such as at Stonehenge, toward astronomically significant directions. Perhaps this is partly due to the fact that the words "aligned" and "alignment" can imply either an intentional purpose or accidental coincidence, depending entirely on the assumptions of the reader. I will use these words to mean only a suggestive fact, a geometrical happenstance needing additional evidence before it can be accepted as one of the purposes of the builders of the site. In the Old World, analysis of many similar stone circles has revealed patterns consistent enough to verify their astronomical intent. In the New World, confirming evidence has come from oral or written history. But since we do not know even the dates or identity of various constructors of the Bighorn Medicine Wheel, there is little hope for historical confirmation of its purposes. The analysis of other medicine wheels for astronomical theories I will describe . . . have survived ten years of discussion in the academic literature, and appear to me to be the most plausible ones. However, they remain unproven, and although they could be investigated archaeologically, they have not been (Hunter and Fries 1986:25).

SUBGROUP 7 MEDICINE WHEELS

Subgroup 7 medicine wheels are characterized by a prominent central stone cairn surrounded by a stone ring. Two or more stone lines extend outward from the margins of the stone ring. Two (3%) of the 67 medicine wheel structures fall into Subgroup 7 (Table 14). Both structures are found in southeastern Alberta (Figure 65).

PHYSIOGRAPHIC AND TOPOGRAPHIC SETTING

The Many Islands Lake medicine wheel is located on a prairie surface bordering a prominent escarpment with a commanding view over a glacial lake basin. The Miner No. 1 medicine wheel is located on the prairie surface along the edge of the Red Deer River valley. Topographic relief, expressed as the number of 25-foot contour lines present with a 0.5 km radius of each structure, is seven lines at the Many Islands Lake wheel and eight lines at the Miner No. 1 wheel.



1 - EbOm-1 Many Islands Lake 2 - EfOo-10 Miner No. 1

Figure 65. Distribution of Subgroup 7 medicine wheels.

METRIC AND NON-METRIC CHARACTERISTICS

The Many Islands Lake wheel has a 12 m diameter stone circle from which six spokes radiate outward from 18 to 135 m (Figure 66). Two of the stone spokes bifurcate along their course. The central cairn is 2.5 m in diameter and 20 cm high (Table 15).

The Miner No. 1 wheel has a stone ring 15 m in diameter with 22 radiating spokes 0.5 to 26.7 m in length (Figure 67). Thirteen of these spokes are small (ca. 1 m or less in length). Small cairns mark

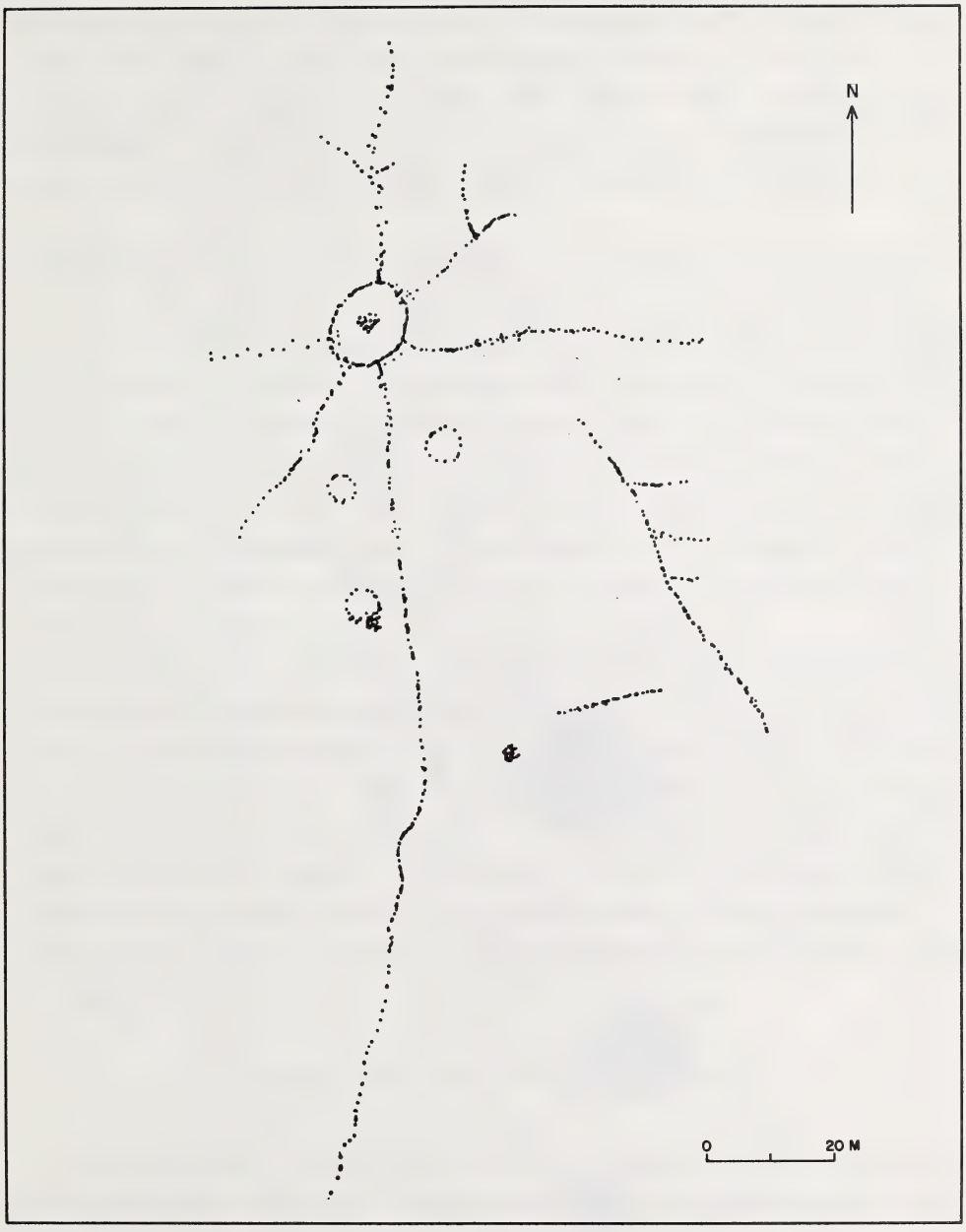


Figure 66. Plan map of EbOm-1, Many Islands Lake, Subgroup 7 medicine wheel (unpublished drawing, Archaeological Society of Alberta 1979).

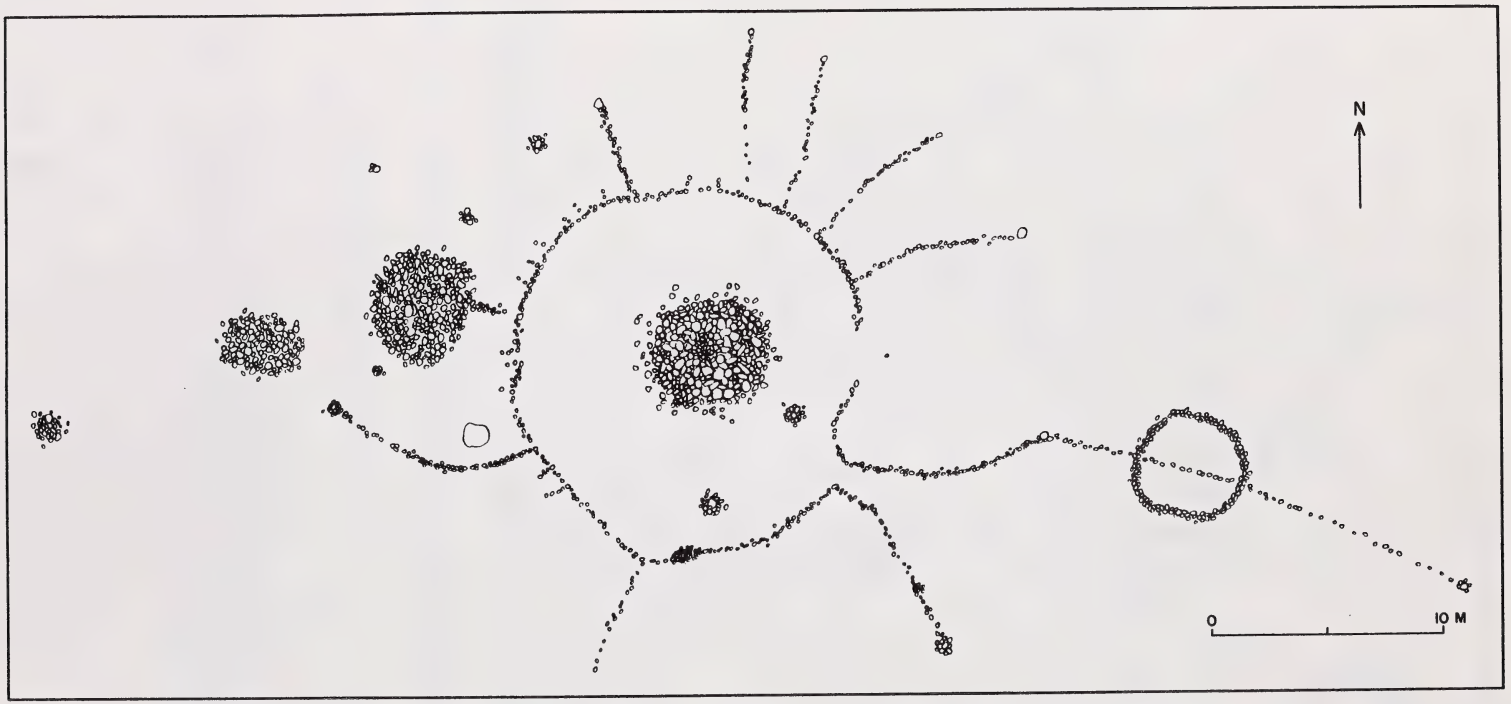


Figure 67. Detailed map of EfOo-10, Miner No. 1, Subgroup 7 medicine wheel (from Walde 1976).

the terminus of three large spokes. Two gaps are present in the stone circle wall and are referred to as doorway openings. One of the doorway gaps is between two of the larger spokes which creates something of a passageway entry similar to Subgroup 2 structures. The central cairn is 6 m in diameter and of indeterminate height.

ANCILLARY FEATURES

No ancillary features were present within the stone circle at the Many Islands Lake wheel. Outside the wheel, at least 20 stone circles and four small to medium stone cairns were noted. The stone circles were deeply buried and many more largely or completely buried circles may be present. As well, two isolated stone line sections are located southeast of the stone circle. The largest is 57 m long with three connecting bifurcating branches along its course. The second is a simple stone line 17 m long.

At Miner No. 1, interior ancillary features include two small cairns between the stone circle and the central cairn. A single small cairn is incorporated within the wall of the stone circle. Two large and five medium to small stone cairns are situated outside the ring, immediately to the west (Figure 67). To the east, the longest spoke passes through what appears to be a tipi ring. To the north 120 m is the Miner No. 2 medicine wheel (Subgroup 1) with a possible turtle effigy between the two wheels. Around and between the two wheels are a minimum of 20 tipi rings.

FEATURE CONDITION AND RESEARCH STATUS

Maps are available for both features. Miner No. 1 is unexcavated and undisturbed. The Many Islands Lake wheel is undisturbed and has been test excavated with results unpublished.

EVIDENCE RELATING TO CONSTRUCTION AND USE

Ethnographic Evidence

No ethnographic evidence relating to the construction or use of either structure is known.

Archaeological Evidence

Testing in 1983 (directed by the writer) at the Many Islands Lake site involved excavation of a 2 x 2 m unit within the stone circle of the medicine wheel, encompassing one quarter of the central cairn. Results of this work are unanalyzed; however, a few preliminary observations can be made. Extensive quantities of cultural material were recovered from between 5 and 65 cm below surface (ca. 2,000 pieces). This material consists primarily of local Swan River Chert debitage and core fragments. The base of the cairn appeared at approximately 20 cm below surface. The area beneath the cairn was highly disturbed, apparently as a result of rodent activity. No evidence of a central pit or other features was noted within or under the cairn. Diagnostic cultural materials recovered in excavations consisted of a post-Avonlea side-notched projectile point and corner-notched Pelican Lake point. Both were found in apparently rodent disturbed contexts.

The general impression at this point is that the location of the Many Islands wheel was utilized extensively over a long period of time prior to construction of the central cairn. Material reflecting this occupation is unusual in that it only minimally reflects general campsite activities with apparent use emphasis on a lithic workshop area. This is even more unusual in that the primary lithic being utilized - Swan River Chert - is present but not particularly abundant in surficial deposits within the site area.

SUBGROUP 8 MEDICINE WHEELS

Subgroup 8 structures are characterized by a prominent central cairn surrounded by a stone ring. Two or more stone lines extend outward from the cairn and pass through the ring wall some distance

before terminating. Two (3%) of the 67 medicine wheel structures have been defined as Subgroup 8 structures (Table 16). Both are situated in southeastern Saskatchewan (Figure 68).

PHYSIOGRAPHIC AND TOPOGRAPHIC SETTING

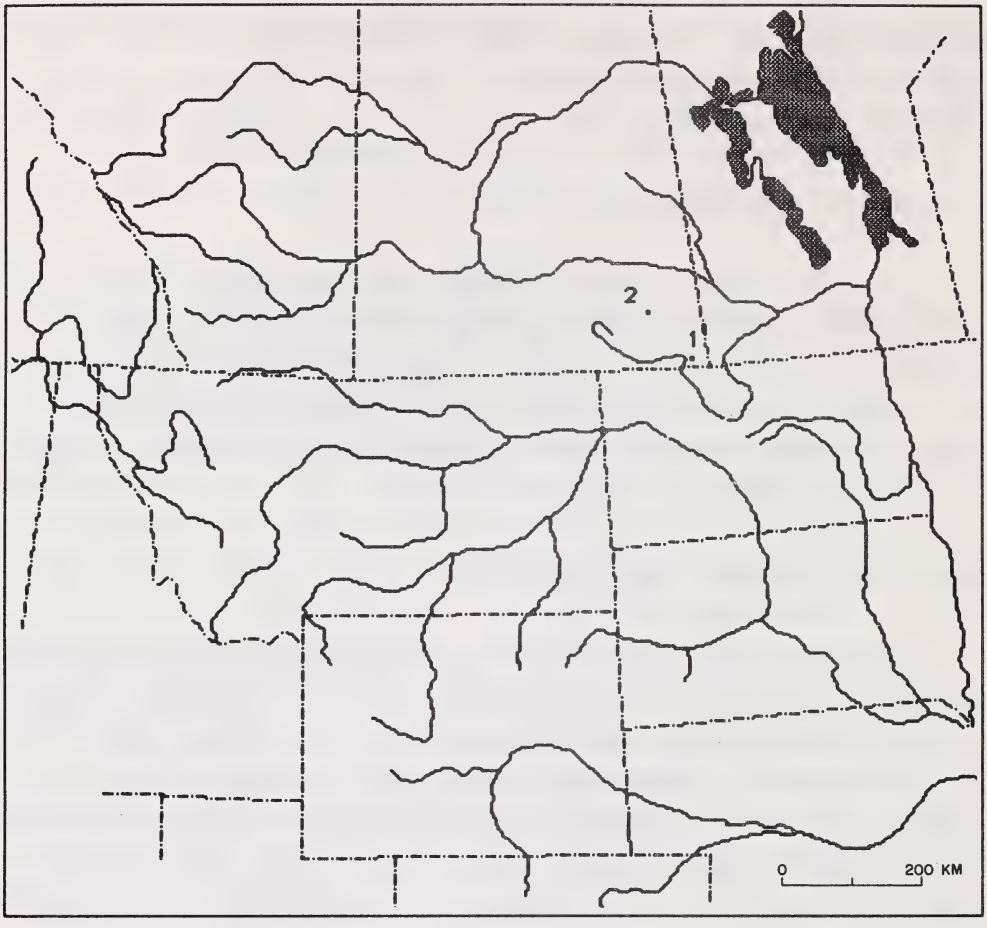
The Moose Mountain wheel is situated atop the summit of a prominent hill, while the Oxbow West wheel is located on a terrace surface in the Souris River valley. Topographic relief, expressed as the number of 25-foot contour lines present with a 0.5 km radius of each structure, is seven lines for the Moose Mountain wheel and eight lines for the Oxbow West wheel.

METRIC AND NON-METRIC CHARACTERIZATION

A somewhat confusingly written description was available only for the Oxbow West wheel. It apparently consists of a 1 m diameter central cairn of indeterminate height surrounded by a 10 m diameter stone circle (Table 17). A prominent "doorway gap" is present in the southeast portion of the wheel. Seven stone lines, ranging from 15 to 75 m in length, radiate outward from the central cairn, through and beyond the stone circle. A southwest stone line terminates in a small cairn. Two southerly stone lines parallel each other for nearly 40 m then merge into one line and extend for an additional 35 m.

The Moose Mountain wheel is described as consisting of:

> . . . a central cairn thirty feet in diameter, constructed of loose rounded boulders about one to one-and-one half foot in diameter. The center of the cairn is lower than its periphery, perhaps due to the actions of treasure-seekers. . . . From the central cairn radiate five lines of small rounded boulders, each line ending in a mound of stones about three feet in diameter. An elliptical circle of stones, sixty-two by fifty feet, surrounds the central cairn. The stones in the lines and circle, and those at the bases of the cairn and mounds, are solidly embedded in the soil, although the loose stones on the tops of the mounds and central cairn have been somewhat disturbed, by cattle as well as by visitors (Kehoe and Kehoe 1979:9).



1 - DgMn-3 Oxbow West 2 - DkMq-2 Moose Mountain

Figure 68. Distribution of Subgroup 8 medicine wheels.

ANCILLARY FEATURES

Information regarding ancillary features at the Oxbow West wheel is restricted to reference to a cairn at the terminus of a spoke and a tipi ring through which another spoke passes. The site also contains the Oxbow East medicine wheel (Subgroup 3) and apparently a number of other, unspecified ancillary features.

Within the stone circle at the Moose Mountain wheel, the Kehoes located what they describe as a "cluster of stones, smaller than those

for the mound. . . . The cluster consists of a center of contiguously - laid stones, from which radiate six short lines of stones. The configuration resembles a sunburst" (Kehoe and Kehoe 1979:12). Outside the stone circle, ancillary features appear to be restricted to medium-size cairns working the terminus of all spokes (see Figure 69).

FEATURE CONDITIONS AND RESEARCH STATUS

The central cairn of the Oxbow West wheel has been vandalized to a indeterminate extent. Apparently detailed mapping has been carried out, but the site has not been excavated.

The Kehoes note that the central cairn at the Moose Mountain wheel and cairns at the terminus of the five spokes may have been vandalized to a limited extent. The site has been mapped and excavated with results presented by Kehoe and Kehoe (1977, 1979).

EVIDENCE RELATING TO CONSTRUCTION AND USE

Ethnographic Evidence

No ethnographic evidence relating to the construction or use of either wheels is available. This is in spite of intensive research and ethnographic interviewing by the Kehoes: "ethnographic interviewing consistently drew a blank on the Moose Mountain configuration" (Kehoe and Kehoe 1979:36).

Archaeological Evidence

No excavations have been carried out at the Oxbow West wheel. At Moose Mountain, the Kehoes laid out and excavated ten 1 x 1 m pits in 1976. Seven of these pits are laid out in a SW-NE row, paralleling and along the side of one of the stone spokes. The row of pits begins just outside the stone ring and extends in through the ring wall terminating in the centre of the central cairn. Two more units are situated near the end of one spoke at the interface between it and the terminal cairn. The final unit is situated along the ring wall where it is crossed by a spoke. Cultural material outside the cairn was restricted to within an upper humus layer, the base of which varied from 3 to 9 cm

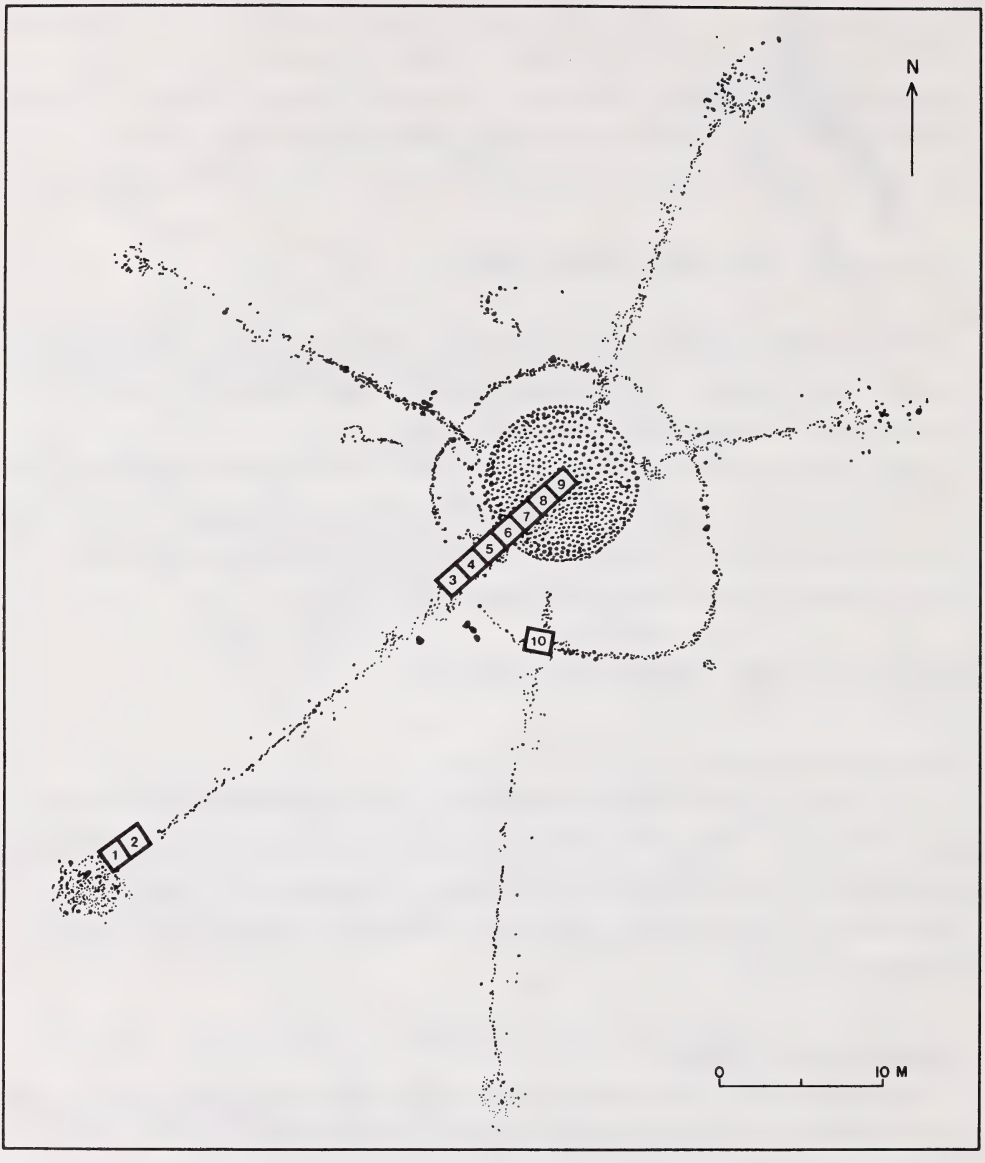


Figure 69. Plan map of DkMq-2, Moose Mountain, Subgroup 8 medicine wheel (from Kehoe and Kehoe 1979:41).

below surface. In excavating the central cairn, charcoal fragments were found below the bottom course of stones comprising the cairn.

> The charcoal fragments may result from burning off the grass before construction. We believe the charcoal must be associated with the initial construction of the central cairn because it is unlikely charcoal would have remained on the hilltop, with its constant wind, unless the fragments were secured by the rocks placed upon them (Kehoe and Kehoe 1979:42).

These charcoal fragments yielded a radiocarbon date of 2650 $\pm$ 245 years B.P. (S1241). The Kehoes consider the date acceptable. In terms of the relative age of the various structural components of the wheel, the Kehoes conclude:

> There is no evidence that would contradict the hypothesis that the rock lines of the Moose Mountain configuration were constructed at the same time as the central and station cairns. However, the very slow accumulation of soil on the hilltop, would allow some time to elapse between construction without sufficient accumulation of soil to indicate the interval (Kehoe and Kehoe 1979:47).

The Kehoes recovered 555 functionally classifiable artifacts plus debitage in excavations at Moose Mountain. The assemblage shows an amazingly high frequency of endscrapers (n=403 or 73%) for which the Kehoes postulate an intriguing hypothesis.

> Why the heavy preponderance of endscrapers at DkMg-2? The paucity of chipping debris indicates the hilltop was not a chipping station, and the number of artifacts from the limited excavations show it was not reserved for esoteric ceremonies. One answer to the question, why so many endscraper, could be that the tool categorized here as "endscraper" was an all-purpose implement. Most of the endscrapers could have been used for heavy cutting, where pressure is exerted upon the edge, as in butchering or cutting wood or bone, as well as for scraping hides, wood, or bone. The presence of other functional categories of artifacts, and of two composite knife-endscrapers and one sidescraper-endscraper combination, suggest there may be an additional factor other than their general usefulness leading to the preponderance of endscrapers. We think selection by gophers may be the answer. This notion stems from the discovery in the central cairn, above the direct layer but well within the rocks, of two Government of Saskatchewan pencils. Each pencil had been gnawed to the lead in the lower portion where fingers had held them. We believe these pencils had been ones we used mapping DkMg-2 in 1961; we

> recall missing pencils on the second day we worked then. Fred Lahrman, naturalist with the Saskatchewan Museum of Natural History, told us when we showed him the pencils from the cairn in 1976 that gophers (ground squirrels and other rodents) steal pencils and similar implements to gnaw the sweat-stained areas in order to obtain the salt deposited from the sweat. We hypothesize, therefore, that most of the endscrapers excavated from the cairns and adjacent to the rock lines in DkMg-2 had been taken by gophers into their burrows under the rocks in order to gnaw the salty sweat-stained handles of the implements. The tissue and grease that would also have adhered to the tools if they had been used for hide-scraping and butchering would probably have been additional lure to the gophers. Gopher thievery would account for the majority of endscrapers showing evidence of use but not appearing to be worn out. Under this hypothesis, we conclude that hafted endscrapers useful for hiding scraping, butchering, and cutting wood and bone were the most common tool used in DkMg-2, but that the distribution of these artifacts on the site reflect the activities of gophers rather than placement by humans (Kehoe and Kehoe 1979:54).

In discussing the overall assemblage of cultural materials from Moose Mountain and comparing it to the Majorville cairn, they observe:

> The artifacts excavated do not appear to have had ceremonial significance. The preponderance of crude endscrapers suggests the cool, windy hilltop was a favorite spot for scraping hides -- one can picture the women of a prehistoric hunting band, working at the stretched bison hides, grateful for the wind that relieved their perspiring bodies and carried away the stink of the skins. The DkMg-2 artifact collection, contrasts with that from the Majorville Cairn (EdPc-1), Alberta, excavated and published by J. M. Calder (1977). At Majorville, projectile points were common and a number of non-utilitarian artifacts, including pipes, iniskim (fossils used as bison-calling fetishes by the Blackfoot), and beads were recovered. These results led Calder to conclude that offerings were made at the Majorville Cairn, while there is no evidence offerings were made at the Moose Mountain cairn, although it is possible some of the utilitarian artifacts were recovered had been left on the cairn as offerings. An examination of the Majorville configuration by John A. Eddy did not demonstrate any obvious astronomical alignments there, further contrasting the Alberta site with Moose Mountain (Kehoe and Kehoe 1979:59).

The Moose Mountain wheel is also regarded as being astronomically aligned.

> Although 425 miles from Wyoming and Medicine Mountain, [the Moose Mountain wheel] . . . bears so strong a resemblance to the pattern of cairns in the Big Horn wheel that it could have been built from the same set of plans. To my mind it confirms without much doubt, the astronomical use of these mysterious structures.
>
> A large central cairn, typical of all the Canadian wheels, is at the middle of five long spokes; at the end of each, as at the Bighorn wheel, is another cairn. Their positions match like fingerprints, the cairns of the Big Horn wheel. At the end of the longest spoke, the largest and most prominent cairn lines up with the hub to mark the direction of sunrise at summer solstice. Other cairns, just as at the Big Horn wheel, mark where Aldebaran, Rigel and Sirius rose.
>
> If we presume that the Moose Mountain wheel had been built about 1,700 years ago, then alignments were nearly perfect. And at that time, about A.D. 300, Aldebaran would have served as a perfect harbinger of the summer solstice at the site. This meant that for more than 1,000 years the early Indians of the plains were using the same star risings, and the sun's to mark the summer solstice (Eddy 1977b:144).

SUMMARY AND DISCUSSION

The preceding sections have presented a description and summary of the empirical data base presently available on those cultural features generally referred to as medicine wheels. Emphasis is placed here on the term empirical. Interpretive statements presented have been restricted to those based on empirical data gathered by researchers in the course of ethnographic and archaeological fieldwork and referrable to specific structures. Medicine wheels have for years captured the interest and imagination of both the general public and archaeologists alike. The result has been a proliferation of speculative statements and theories but with little demonstrable basis. In the final pages of his report, I do not intend to summarize and present these arguments. For a discussion and thorough review of this material, the reader is referred to Wilson (1981). Here I would like to evaluate the definitions and concepts introduced for medicine wheels, to discuss impressions and ideas regarding medicine wheels generated in conduct of this study, and to make some general comments regarding future management and research at medicine wheel sites.

EVALUATION OF THE PROPOSED CONCEPTS

One factor which has resulted in the present confused picture of medicine wheels is the lack of a clear concept of what medicine wheels physically consist of and the range of variation present. A definition of medicine wheels has been proposed and is utilized here. As well, a descriptive series of medicine wheel subgroups have been defined and employed as an initial mean of segregating the entire medicine wheel sample into units for detailed description and examination. The test of the definition and the model of subgroups is how well they accommodate the real world, that is, how often and in what manner we have to stretch and/or distort those definitions to fit actual examples. The medicine wheel definition presented seems to work well. Only one structure was encountered which proved difficult to classify as a medicine wheel (the Minton Turtle effigy; Kehoe and Kehoe 1979).

One class of cultural feature which some researchers appear to consider medicine wheels, and which are not included here, are large stone circles - outside the normal size of domestic tipi rings - not including a prominent central stone cairn or radiating spokes. The definition of medicine wheels presented here was initially formulated in examination of a number of "classic" medicine wheel structures such as the British Block, Bighorn, Moose Mountain, Majorville and the historic Blackfoot examples. All of these forms are composite; that is, they all contain at least two of the three primary structural elements. On that basis, it is argued the large stone circles without stone spokes or prominent central cairns should not be considered medicine wheels. This is not to say that future research will not indicate these circles share some function in common with medicine wheels.

Subdivision of the general category of medicine wheels into the eight subgroups was somewhat less satisfactory but still preferable to no division. If this paper does nothing else, hopefully it demonstrates the tremendous internal diversity exhibited by this class of cultural feature. Meaningful interpretation of medicine wheels must take this diversity fully into account. Certainly the reader observed instances presented here where the differences between defined

subgroups and actual features were blurred making it difficult to assign a given medicine wheel to one subgroup or another. As well, one could argue for a system with more than the eight subdivisions presented here. Diversity within several of the defined subgroups is clearly great and will need to be taken into account by researchers dealing with those subgroups. However, given our present knowledge of medicine wheels, subdivision of the sample into additional subgroups at this time would seem premature and inappropriate.

ETHNOGRAPHIC EVIDENCE

Although limited, evidence relating to construction and use of medicine wheels has been extremely valuable. The best ethnographic data set available is from the Blackfoot. This Blackfoot data indicate construction of structures similar to Subgroups 3 and 4 as memorials and/or burial covers for prominent warriors. Excavated material from the Ellis medicine wheel was convincingly interpreted utilizing this Blackfoot data. The Ellis site also provided a good example of how archaeological and ethnographic data can complement and augment each other. The ethnographic data provide an excellent basis for interpreting the function of the Ellis wheel, making a case for Blackfoot association with the Ellis wheel and with the majority of Subgroup 4 medicine wheels, and arguing for the late prehistoric presence of Blackfoot in the region. Conversely, the archaeological data from Ellis provide valuable evidence for evaluating current ethnographic models. For example, several ethnographic attempts to interpret the role and significance of historic intertribal warfare have suggested the introduction of the horse was a major significance. The Ellis site, with its late prehistoric, obviously pre-horse date, could be used as evidence for significant intertribal warfare before the horse as reflected by a specialized burial practice apparently reserved for individuals who have obtained status in war.

The second major set of ethnographic data concerning medicine wheels is that available for the Bighorn wheel in north central Wyoming and, secondarily, for the nearby Fort Smith wheel in southern Montana. This data set is contradictory but again important. Various references

suggest knowledge and use of the Bighorn wheel by the Shoshoni, Cheyenne and Crow. It should be pointed out that all the suggested tribal associations may be correct. The Bighorn wheel may well have been used by several groups. Archaeological evidence suggests that the Bighorn wheel is at least in part accretional and thus may have been modified through time by groups other than its original constructors. Archaeological evidence from Canadian medicine wheels, such as Majorville, the British Block and Manyberries, suggests a long-term, accretional history for some. Multiple functions for medicine wheels through time have also been suggested for Majorville. The secondary burials recovered at the Manyberries and Twin Peaks wheels again reflect an apparent multiplicity and shifting of functions through time.

Grinnell (1922) makes a strong case for structional similarities between the Bighorn medicine wheel and the Cheyenne Sun dance lodge. The parallels are striking and convincing and have served as the basis for sun dance associations with all or many medicine wheels. However, as should be obvious from data presented, other ethnographic and archaeological evidence indicate that this model simply does not hold up for medicine wheels in general. Grinnell suggests that the stone circle of the Bighorn wheel is a symbolic representation of a Sun Dance lodge wall. Evidence from the Blackfoot suggest the stone circle of Subgroup 4 structures are actual tipi rings - again representing (or reflecting) the presence of a lodge wall. Further consideration should be given to the possibility that the circle element in medicine wheels are symbolic representations or the actual structural remains of lodges. The general type of lodge associated historically with the Sun Dance of the Cheyenne and other Plains groups may well have functioned in a number of other group social and religious functions. Other large circular lodge types are known aside from that associated with the Sun Dance. R. N. Wilson photographed one such structure of the Bloods in 1892 which is illustrated and described by Hungry Wolf.

> The Motokies had put their lodge. . . . It was not big. Their lodge looked like a small medicine lodge without any coverings or boughs. The framework was covered with tipi linings around the sides and tipi covers over the top. A long tipi pole . . . was used as the centerpole (Hungry Wolf 1977:111-113).

Pursuing this argument further, Grinnell's suggestion that the spokes and central cairn within the Bighorn wheel are representations of the rafters and centerpole should be considered seriously in examining and evaluating other medicine wheel structures. The possibility that the element in medicine wheel stone circles - both large and small - may reflect actual structural remains might be testable by exploring through excavation for other structural evidence.

ARCHAEOLOGICAL EVIDENCE

Although only a limited amount of the archaeological research conducted at medicine wheel sites has been reported, the information that is available has greatly increased our overall knowledge of these structures. It also indicates that archaeological research can make major contributions to our understanding of such structures. Archaeological excavations at such sites as Majorville, Moose Mountain, Bighorn and Ellis have provided temporal parameters for several medicine wheel forms, as well as providing general information by way of associated cultural material aspects of their use. The frequent association of medicine wheels with numerous tipi rings and, at the British Block, a camp circle can be used as an argument that medicine wheels reflect group-oriented rather than individual religious and social activities. The overall magnitude of many medicine wheel structures is also suggestive of group activities. The apparent association of the camp circle with the British Block apparently during the McKean Phase provides a unique case for suggesting considerable time depth in aspects of basic social organization characterizing historic Plains Indian groups. The point to be made here is not to reiterate archaeological data already presented but to point out that archaeological research conducted at medicine wheels has been highly productive and has yielded highly significant research results.

On a more general note, data from several sites and in particular the British Block suggest that, in attempting to understand medicine wheels, we should extend our view and research efforts beyond the immediate margins of the wheel itself. Finnigan's (1982) research at the British Block campsite was directed towards tipi rings and not

medicine wheels. However, that work has resulted in a significant increase in our understanding of the social units involved in use of that medicine wheel, in particular, and possibly of medicine wheels in general. Future research efforts should attempt to understand and interpret medicine wheels in a broader site and local setting.

MANAGEMENT AND RESEARCH CONSIDERATIONS

Medicine wheels as a class of archaeological feature are quite rare on the Plains. In the course of this project, information was obtained on only 67 structures felt to be classifiable as medicine wheels. Undoubtedly, references to some structures have been missed. As well, several new features will certainly be discovered and recorded in the future. However, even if in the next few years the number of known medicine wheels doubles, the sample will be extremely small. The limited number of medicine wheels is further emphasized if one takes into account the diversity of forms present, discussed here in reference to the eight defined subgroups. The largest of these subgroups consists of only 22 medicine wheels or 33 percent of the entire sample. Four of the defined subgroups contain only two or three individual medicine wheels. Although our present knowledge of medicine wheels is limited, what we do know suggests that the structural differences reflected by the various subgroups do represent significant functional, temporal and ethnic differences. Even within Subgroup 4, the best ethnographically and archaeologically documented subgroup, there is evidence of significant functional and ethnic differences. The information presented here also demonstrates how "the mystery of the medicine wheels" reflects in large part the limited research effort expended in their examination. Wherever research has been conducted and reported on, it has made a major impact on our understanding of these structures (see Brumley 1985; Calder 1977; Grey 1963; Kehoe and Kehoe 1979). Medicine wheels have major research potential. As such, each medicine wheel must be perceived and managed as the unique, non-duplicated cultural features of high public, cultural, and scientific interest and significance that it is.

Medicine wheels presently appear to be limited in distribution to Alberta, Saskatchewan, Montana and Wyoming. Resource managers within those areas are urged to make every effort to ensure the protection of medicine wheels by giving them protective legal status (i.e., site designation or nomination to the National Register). However, it should be realized that such legal status will prove to be a major deterrent only against destruction by planned developments (i.e., highways or oil and gas developments). Only 20 of the 67 structures reported here have been totally destroyed since initial recording by oil and gas and farming activities. The remaining 45 medicine wheels have been damaged to varying extents by vandalism. There is no way that a legislated legal status can effectively protect medicine wheels from this type of destruction. One or two individuals can, in the matter of a few hours, destroy or irrevocably damage one of these structures. Thus, additional management measures are necessary. In Alberta and Saskatchewan, an excellent program of medicine wheel mapping has been carried out by the Archaeological Survey of Alberta, the local chapters of the Archaeological Society of Alberta and the Saskatchewan Museum of Natural History. These mapping programs need to be continued or updated. Presently available maps provide the best overall data base available on medicine wheels for the northern Plains. In Wyoming, the Bighorn medicine wheel has apparently been thoroughly mapped by the Wyoming Archaeological Society. However, only two of the seven Montana wheels have been adequately mapped. Any future mapping efforts could benefit from development of a set of basic standards. As well, such standards should identify what field data need to be gathered for researchers interested in examining possible astronomical alignments.

Again, in part because of the vulnerability of medicine wheels to vandalism, resource managers should encourage and support well-designed excavation research programs at medicine wheels. The field conclusion of any such excavation program should be the complete and accurate restoration of the medicine wheel to its original structural form. During the 1950s and 1960s, a number of medicine wheel sites described here were tested or extensively excavated. Little of this work has been reported. Priority should be given to analysis and reporting of

this data base, particularly in the next few years while the researchers who originally dug these sites are still available for at least interviewing.

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Table 1. Summary of abbreviations for Tables 2 to 17.

PHYSIOGRAPHIC SETTING CATEGORIES

CODE	DESCRIPTION
1.1	On open prairie surface from 0 to 0.5 km from coulee edge
1.2	On open prairie surface from 0 to 0.5 km from stream valley edge
1.3	On open prairie surface from 0 to 0.5 km from major river valley edge
1.4	On open prairie surface from 0 to 0.5 km from edge of other type of escarpment
2.3	On open prairie surface atop crest of hill or ridge and greater than 0.5 km from escarpment edge
8.2	In central portion of major river valley bottom
IND	Indeterminate or unknown

TOPOGRAPHIC CLASS

Site/feature topographic relief is scaled here in relation to the number of separate 25-foot contour interval lines present within and in a 0.5 km radius of the site. Separate but equal elevation contour lines are counted separately. Data is derived from NTS or USGS map sheets, scaled to 25-foot contours. Values relate to the number of contour lines present. Values presented represent the actual number of contour lines counted.

RESEARCH STATUS AND SITE CONDITIONS

ABBREVIATION	DEFINITION*
NMA	No maps available of medicine wheel
SMA	Sketch map only available of medicine wheel
DMA	Detailed map available of medicine wheel
UNEX	Unexcavated
EXUN	Excavated - data unpublished
EXPUB	Excavated - data published
UND	Medicine wheel undisturbed
DIST	Medicine wheel disturbed to varying extents
DTD	Medicine wheel destroyed

*Categories follow Brumley et al. (1983:35-40)

Table 1. continued

PRIMARY REFERENCES	
ASA site form	Site recording form and notes on file, Archaeological Survey of Alberta, Edmonton.
SMNH site form	Site recording form and notes on file, Saskatchewan Museum of Natural History, Regina.
MSAS site form	Site recording form on file, Montana Statewide Archaeological Survey, Missoula.

Table 2. Summary of Subgroup 1 medicine wheels.

SITE NUMBER	SITE NAME	MAP REFERENCE	PHYSIOGRAPHIC SETTING	TOPOGRAPHIC CLASS	RESEARCH STATUS	SITE CONDITION	PRIMARY REFERENCES
DgOo-1	Manyberries	Fig. 3:2	1.3	6	DMA, Exun	Dist	Carter 1967; Freiberg 1974; Walde 1976
DgPa-1	None	Fig. 3:1	1.2	7	NMA, Unex	Dtd	ASA site form; Walde 1976
DhOs-1	Faith	Fig. 3:3	1.1	8	NMA, Unex	Und	ASA site form
EcOp-51	Twin Peaks	Fig. 3:4	2.3	3	NMA, Exun	Dist	Brumley and Willis 1976
EdOm-2	None	Fig. 3:5	1.3	8	NMA, Unex	Dist	ASA site form
EdOp-1	British Block	Fig. 3:6	2.3	8	DMA, Exun	Dist	Wormington & Forbis 1965; Finnigan 1982
EdOq-30	M-40	Fig. 3:7	2.3	8	DMA, Unex	Dist	ASA site form; Byrne 1971; Walde 1976
EdPg-1	Buffalo Hill	Fig. 3:8	2.3	7	NMA, Unex	Dist	ASA site form; Forbis 1958
EfOo-10	Miner No. 2	Fig. 3:9	1.3	8	DMA, Unex	Und	ASA site form; Walde 1976
EfOo-24	Miner No. 3	Fig. 3:11	1.3	8	DMA, Unex	Dist	ASA site form; Adams 1976; Walde 1976
EfOq-65	Anderson No. 2	Fig. 3:10	1.3	7	DMA, Unex	Dist	ASA site form; Walde 1976

Table 2. continued

SITE NUMBER	SITE NAME	MAP REFERENCE	PHYSIOGRAPHIC SETTING	TOPOGRAPHIC CLASS	RESEARCH STATUS	SITE CONDITION	PRIMARY REFERENCES
EfOq-87	Ross	Fig. 3:12	2.3	6	DMA, Unex	Und	ASA site form; Walde 1976
EhOp-1	Buffalo Bird	Fig. 3:13	2.3	4	DMA, Unex	Dist	ASA site form; Walde 1976
EkPf-1	Rumsey	Fig. 3:14	2.3	8	DMA, Exun	Dist	ASA site form; Walde 1976
FbOr-48	None	Fig. 3:15	2.3	8	NMA, Unex	Ind	ASA site form
EfOl-2	Roy Rivers	Fig. 3:16	1.3	8	DMA, Unex	Und	SMNH site form; Kehoe & Kehoe 1977, 1979
FbNp-2	Tipperary Creek	Fig. 3:17	1.3	4	DMA, Exun	Dist	SMNH site form; Kehoe & Kehoe 1979
EdOo-39	Lone Antelope	Fig. 3:18	2.3	IND	SMA, Unex	Und	ASA site form; Dau 1986a
EaOn-3	Loose Wheel	Fig. 3:19	2.3	IND	NMA, Unex	Und	ASA site form; Dau 1986a
DjPi-1	Jim Allen	Fig. 3:20	2.3	IND	NMA, Unex	Dist	ASA site form
24PH1118	Orahood	Fig. 3:21	2.3	IND	SMA, Unex	Und	MSAS site form
24PH1102	None	Fig. 3:22	2.3	IND	SMA, Unex	Dist	MSAS site form

Table 3. Select metric and non-metric data for Subgroup 1 medicine wheels.

SITE NUMBER	SITE NAME	STONE RING DIAMETER (m)	CENTRAL CAIRN DIA(m)	CENTRAL CAIRN HGT(m)	ANCILLARY FEATURES INSIDE STONE RING	ANCILLARY FEATURES OUTSIDE STONE RING
DgOo-1	Manyberries	25	10	2	None	Ind
DgPa-1	None	13	2.5	Ind	cairns (n=5); possibility that central cairn may have been modified by addition of head and legs to form turtle effigy	Ind
DhOs-1	Faith	Ind	Ind	Ind	None	Cairns (n=?), tipi rings (n=?) in vicinity
EcOp-51	Twin Peaks	Ind	Ind	Ind	Cairn (n=1)	Cairn (n=1)
EdOm-2	None	Ind	Ind	Ind	None	Cairn (n=6), tipi rings (n=12)
EdOp-1	British Block	30	9	2.5	Anthropomorphic effigy	Cairns (n=5), tipi rings (n=51)
EdOq-30	M-40	20	3	1	None	Cairn (n=1)
EdPg-1	Buffalo Hill	40	Ind	Ind	None	Tipi rings (n=?) in vicinity
EfOo-10	Miner No. 2	15.5	6	Ind	Rectangular cairns (n=2) incorporated in ring wall	Cairns (n=2)
EfOo-24	Miner No. 3	18	4-5	Ind	None	Tipi rings (n=40)

Table 3. continued

SITE NUMBER	SITE NAME	STONE RING DIAMETER (m)	CENTRAL CAIRN DIA(m)	CAIRN HGT(m)	ANCILLARY FEATURES INSIDE STONE RING	ANCILLARY FEATURES OUTSIDE STONE RING
EfOq-65	Anderson No. 2	20	10	1.3	11 stone lines extend outward from various portions of surrounding ring wall; not considered primary components for feature subgroup definition	Tipi rings (n=?)
EfOq-87	Ross	Ind	2.5	Ind	Incomplete anthropomorphic effigy	Ind
EhOp-1	Buffalo Bird	Ind	8	Ind	None	Ind
EkPf-1	Rumsey	17	12	1	Depression (n=1), cairn (n=1)	Depression (n=1), tipi rings (n=?), anthropomorphic effigy (n=1)
FbOr-48	None	8	2	Ind	None	Ind
EfOl-2	Roy Rivers	30	6	Ind	2 parallel stone lines connect central cairn with surrounding stone ring; 15 small cairns and possible "sunburst effigy" surround central cairn within ring	Ind
FbNp-2	Tipperary Creek	13	7	Ind	None	Cairns (n=5)

Table 3. continued

SITE NUMBER	SITE NAME	STONE RING DIAMETER (m)	CENTRAL CAIRN DIA(m)	CENTRAL CAIRN HGT(m)	ANCILLARY FEATURES INSIDE STONE RING	ANCILLARY FEATURES OUTSIDE STONE RING
24PH1102	None	14.5	3	Ind	None	Cairns (n=8), tipi rings (n=2)
EdOo-39	Lone Antelope	9.5	2.5	Ind	None	Cairns (n=18), tipi rings (n=1)
EaOn-3	Loose Wheel	10	2	Ind	None	None
DjPi-1	Jim Allen	8.5	1.5	0.5	None	None
24PH1118	Orahood	18	4.5	Ind	None	3 parallel closely spaced alignments of series of small cairns NW of wheel

Table 4. Summary of Subgroup 2 medicine wheels.

SITE NUMBER	SITE NAME	MAP REFERENCE	PHYSIOGRAPHIC SETTING	TOPOGRAPHIC CLASS	RESEARCH STATUS	SITE CONDITION	PRIMARY REFERENCES
DhPb-2	Antelope Hill	Fig. 20:1	2.3	5	DMA, Unex	Dist	Arch. Society of Alberta 1970; Walde 1976
EaPe-1	Sundial Hill	Fig. 20:2	2.3	7	DMA, Unex	Dist	Arch. Society of Alberta 1976c; Forbis 1958; Walde 1976; Wilson 1981
EfOq-36	Anderson No. 1	Fig. 20:3	1.3	5	DMA, Unex	Dist	ASA site form; Adams 1976; Walde 1976
EgPn-53	Barry	Fig. 20:4	1.3	5	DMA, Exun	Dist	ASA site form; Walde 1976
EgNx-1	Hughton	Fig. 20:5	1.4	8	DMA, Exun	Dist	Watson 1969, 1974b; Kehoe & Kehoe 1977
-	Eagle Butte	Fig. 20:6	2.3	8	DMA, Unex	Dist	Brumley personal communication

Table 5. Select metric and non-metric data for Subgroup 2 medicine wheels.

SITE NUMBER	SITE NAME	STONE RING DIAMETER (m)	CENTRAL CAIRN DIA(m)	CAIRN HGT(m)	PASSAGEWAY ORIENTATION	ANCILLARY FEATURES INSIDE STONE RING	ANCILLARY FEATURES OUTSIDE STONE RING
DhPb-2	Antelope Hill	12.5	5	1.75	SE	stone cairns are located at terminus of both stone lines forming passageway	cairns (n=2), stone circles (n=10)
EaPe-1	Sundial Hill	inner 17 outer 27	6	1	SSW	cairn (n=1), depressions (n=1 or 2)	cairns (n=4), depressions (n=3)
EfOq-36	Anderson No. 1	23	4	Ind	SE	along south side of stone ring, ring wall jogs outward, over and then back in, to form a square "notch" which protudes out 1 m	stone circles (n=9), cairns (n=1)
EgPn-53	Barry	9x11	Ind	Ind	ESE	none	Ind
EgNx-1	Hughton	15	8	Ind	NE	none	Ind
None	Eagle Butte	Ind	Ind	Ind	Ind	Ind	Ind

Table 6. Summary of Subgroup 3 medicine wheels.

SITE NUMBER	SITE NAME	MAP REFERENCE	PHYSIOGRAPHIC SETTING	TOPOGRAPHIC CLASS	RESEARCH STATUS	SITE CONDITION	PRIMARY REFERENCES
EdOo-3	None	Fig. 30:1	2.3	4	SMA, Unex	Und	ASA site form; Byrne 1971; Brumley & Willis 1976
EfOp-58	Rinker	Fig. 30:2	1.3	8	DMA, Unex	Dist	ASA site form; Adams 1976; Walde 1976
DgMn-3	Oxbow East	Fig. 30:3	1.3	8	DMA, Exun	Dist	SMNH site form
DgNf-3	Doug Wade	Fig. 30:4	1.3	8	DMA, Exun	Dist	SMNH site form; Kehoe & Kehoe 1979; Kehoe 1972
DhNg-1	Birdfoot	Fig. 30:5	1.2	5	DMA, Exun	Dist	SMNH site form; Kehoe & Kehoe 1979
DhOb-2	Canuck	Fig. 30:6	2.3	3	DMA, Unex	Dtd	SMNH site form; Watson 1974a; Kehoe & Kehoe 1979
DiMv-2	Halbrite	Fig. 30:7	1.2	3	DMA, Exun	Dist	Montgomery 1908; Kehoe 1972; Kehoe & Kehoe 1979
EeNg-1	Jelly Ranch	Fig. 30:8	1.3	Ind	DMA, Exun	Dist	Montgomery 1908; SMNH site form; Watson 1972a; Kehoe 1972

Table 6. continued

SITE NUMBER	SITE NAME	MAP REFERENCE	PHYSIOGRAPHIC SETTING	TOPOGRAPHIC CLASS	RESEARCH STATUS	SITE CONDITION	PRIMARY REFERENCES
ElOd-2	Plenty	Fig. 30:9	1.4	8	DMA, Exun	Und	Kehoe 1972; Kehoe & Kehoe 1979
24HL32	None	Fig. 30:10	Ind	Ind	SMA, Unex	Dist	Keyser 1979
EfOp-414	None	Fig. 30:11	1.3	Ind	SMA, Unex	Dist	ASA site form
DjPf-23	Nitapinaw's	Fig. 30:12	1.3	Ind	SMA, Unex	Und	ASA site form; Conaty & Tailfeathers 1985

Table 7. Select metric and non-metric data for Subgroup 3 medicine wheels.

SITE NUMBER	SITE NAME	CENTRAL DIA(m)	CAIRN HGT(m)	NO. OF SPOKES	RANGE OF SPOKE LENGTH (m)	ANCILLARY FEATURES
EdOo-3	None	6	Ind	2+	25	one of spokes bifurcates
EfOp-58	Rinker	6	Ind	5	12-21	cairns (n=2), one of which is located at terminus of spoke, stone circles (n=5)
DgMn-3	Oxbow East	5-6	Ind	4	Ind	Ind
DgNf-3	Doug Wade	Ind	Ind	4 or 5	35-58	None
DhNg-1	Birdfoot	Ind	Ind	3	38-77	cairns (n=2) at terminus of spokes
DhOb-2	Canuck	3	Ind	6	10-15	cairns (n=2) in midsection of two spokes, stone circles (n=?)
DiMv-2	Halbrite	8	2	4	33-103	stone circles (n=5)
EeNg-1	Jelly Ranch	5	1.8	3	13-17	cairns (n=3) at terminus of spokes, stone circles (n=?)
ElOd-2	Plenty	3	Ind	4	16-63	cairn (n=1) in midsection of spoke
24HL32	None	5	Ind	2	5-14	Ind
EfOp-414	None	Ind	Ind	4	20-30	small cairn (n=1) near terminus of one spoke, stone circles (n=4)
DjPf-23	Nitapinaw's	1-1.5	Ind	4	3-3.5	cairn (n=50), stone circles (n=100), stone alignments (n=?), historic graves (n=?)

Table 8. Summary of Subgroup 4 medicine wheels.

SITE NUMBER	SITE NAME	MAP REFERENCE	PHYSIOGRAPHIC SETTING	TOPOGRAPHIC CLASS	RESEARCH STATUS	SITE CONDITION	PRIMARY REFERENCES
None	Eagle Child	Fig. 40:1	Ind	Ind	NMA, Unex	Dist	Dempsey 1956; Kehoe 1972; Kehoe & Kehoe 1979
None	Steel	Fig. 40:2	Ind	Ind	SMA, Unex	Und	ASA site form; Dempsey 1956; Kehoe 1972
DiPi-2	Wolf Child	Fig. 40:4	1.3	5	DMA, Unex	Dist	ASA site form; Walde 1976
DkPf-1	Many Spotted Horses	Fig. 40:5	8.2	1	DMA, Unex	Und	Dempsey 1956; Arch. Society of Alberta 1971; Kehoe & Kehoe 1979
DlOv-2	Grassy Lake	Fig. 40:6	1.3	8	DMA, Unex	Und	Forbis 1960; Wormington & Forbis 1965; Kehoe 1972; Walde 1976; Arch. Society of Alberta 1976a
DlOw-6	Murphy	Fig. 40:7	1.3	8	NMA, Unex	Dist	ASA site form; Quigg 1983
EaOs-2	Suffield	Fig. 40:8	1.3	8	DMA, Unex	Dist	ASA site form; Walde 1976
EcOp-4	Ellis	Fig. 40:9	1.3	8	DMA, Pub	Und	ASA site form; Brumley & Willis 1976; Brumley 1985
EgOx-1	Suitor No. 1	Fig. 40:10	1.3	8	DMA, Unex	Dist	ASA site form; Arch. Society of Alberta 1976a; Forbis 1977

Table 8. continued

SITE NUMBER	SITE NAME	MAP REFERENCE	PHYSIOGRAPHIC SETTING	TOPOGRAPHIC CLASS	RESEARCH STATUS	SITE CONDITION	PRIMARY REFERENCES
EgOx-1	Suitor No. 2	Fig. 40:10	1.3	8	DMA, Unex	Dist	ASA site form; Arch. Society of Alberta 1976b; Forbis 1977
EgOx-29	Suitor No. 3	Fig. 40:11	1.3	8	DMA, Unex	Dist	ASA site form; Arch. Society of Alberta 1976a; Forbis 1977
EgOx-46	Hutton	Fig. 40:12	1.3	8	DMA, Unex	Dist	ASA site form
EkPe-3	Ziegenbein	Fig. 40:13	2.3	2	DMA, Unex	Dist	ASA site form; Kehoe 1972; Walde 1976
EeNe-14	Wilson Russel	Fig. 40:17	1.3	5	DMA, Unex	Dist	SMNH site form
24BH220	Fort Smith	Fig: 40:15	Ind	Ind	DMA, Unex	Dist	Grinnell 1922; Conner 1965, 1967, 1969; Kehoe 1972
24BH797	Grassy Knoll	Fig. 40:16	Ind	Ind	SMA, Unex	Und	MSAS site form
24TT67	Sun River	Fig. 40:14	Ind	Ind	DMA, Unex	Dist	Newcomb 1967; Kehoe & Kehoe 1979
EdOo-38	Dark Horse	Fig. 40:3	2.3	Ind	SMA, Unex	Und	ASA site form; Dau 1986b

Table 9. Select metric and non-metric data for Subgroup 4 medicine wheels.

SITE NUMBER	SITE NAME	STONE RING DIA (m)	NO. OF SPOKES	RANGE OF SPOKE LENGTH (m)	ANCILLARY FEATURES INSIDE STONE RING	ANCILLARY FEATURES OUTSIDE STONE RING
None	Eagle Child	4	4	1-2	Ind	Ind
None	Steel	9	4	Ind	double hearth rings, doorway gap	none
DiPi-2	Wolf Child	6	7	3-7	single hearth ring	spokes formed of small stone piles, depressions (n=20) in vicinity
DkPf-1	Many Spotted Horses	6	4	5-6	double hearth rings, doorway gap	small cairns at terminus of spokes (n=4)
DlOv-2	Grassy Lake	8	6 or 7	30-97	scattered stones, possibly of cultural origin	small cairn at terminus of spoke (n=1), large cairn to east
DlOw-6	Murphy	5	4	50-120	single hearth ring	stone circles (n=3), small cairns at spoke terminus (n=4)
EaOs-2	Suffield	4	5	2-6	depression (n=1)	small cairns at terminus of spokes (n=5)
EcOp-4	Ellis	5	10 or 11	14-19	none	stone circles (n=13), small cairn (n=2), bifurcating spokes (n=3)
EgOx-1	Suitor No. 1	6	8	14-26	single hearth ring	stone circles (n=?), small cairns at spoke terminus (n=8), bifurcating spokes (n=2)

Table 9. continued

SITE NUMBER	SITE NAME	STONE RING DIA (m)	NO. OF SPOKES	RANGE OF SPOKE LENGTH (m)	ANCILLARY FEATURES INSIDE STONE RING	ANCILLARY FEATURES OUTSIDE STONE RING
EgOx-1	Suitor No. 2	4	18	23-33	none	stone circles (n=?), bifurcating spokes(n=2)
EgOx-29	Suitor No. 3	7	7	19-41	none	stone circles (n=?), bifurcating spokes (n=2), terminal stone cairns (n=5), cairn (n=1)
EgOx-46	Hutton	6	17	2-17	none	terminal stone cairns (n=14)
EkPe-3	Ziegenbein	5	5	5-9	single hearth ring	depression (n=1), spokes formed of small stone clusters
EeNe-14	Wilson Russel	6-7	3	28-30	ring wall heavy band of stone 1.25-1.75 m wide	terminal stone cairns (n=3), cairn (n=1), stone circles (n=?)
24BH220	Fort Smith	1	6	13-19	none	Ind
24BH797	Grassy Knoll	Ind	4 or 5	Ind	none	terminal stone cairns (n=3 or 4)
24TT67	Sun River	7	10	7-13	single hearth ring	terminal stone cairns (n=3), stone circles (n=17)
EdOo-38	Dark Horse	5	9	5-16	1 or 2 small cairns in ring	terminal stone cairns (n=4), intermediate cairns (n=2) along line of spoke

Table 10. Summary of Subgroup 5 medicine wheels.

SITE NUMBER	SITE NAME	MAP REFERENCE	PHYSIOGRAPHIC SETTING	TOPOGRAPHIC CLASS	RESEARCH STATUS	SITE CONDITION	PRIMARY REFERENCES
EePi-2	Jamieson's Place	Fig. 58:1	8.2	8	DMA, Unex	Dist	Walde 1967; Thorpe 1982
24PR881	Belle Creek	Fig. 58:2	2.3	Ind	NMA, Unex	Und	MSAS site form

Table 11. Select metric and non-metric data for Subgroup 5 medicine wheels.

SITE NUMBER	SITE NAME	STONE RING DIA(m)	NO. OF SPOKES	ANCILLARY FEATURES	
				INSIDE STONE RING	OUTSIDE STONE RING
EePi-2	Jamieson's Place	24	4	Ind	Ind
24PR881	Belle Creek	10	6	None	Other circles (n=2), "other outside alignments and rock clusters."

Table 12. Summary of Subgroup 6 medicine wheels.

SITE NUMBER	SITE NAME	MAP REFERENCE	PHYSIOGRAPHIC SETTING	TOPOGRAPHIC CLASS	RESEARCH STATUS	SITE CONDITION	PRIMARY REFERENCES
EdPc-1	Majorville	Fig. 60:1	1.3	5	DMA, Expub	Dist	Calder 1977; Walde 1976; Forbis & Calder 1973
39HD22	Jennings	Fig. 60:2	Ind	Ind	SMA, DMA	Und	Abbott et al. 1982; Rood & Overholster-Rood 1983
48BH302	Big Horn	Fig. 60:3	Ind	Ind	DMA, Expub	Dist	Grinnell 1922; Wyoming Arch Society 1959; Grey 1963; Eddy 1974; Wilson 1981

Table 13. Select metric and non-metric data for Subgroup 6 medicine wheels.

SITE NUMBER	SITE NAME	STONE RING DIAMETER (m)	CENTRAL CAIRN DIA(m)	CENTRAL CAIRN HGT(m)	NO. OF SPOKES	ANCILLARY FEATURES INSIDE STONE RING	ANCILLARY FEATURES OUTSIDE STONE RING
EdPc-1	Majorville	27	9	1.6	27	cluster of stones between spokes	2 stone circles immediately east
39HD22	Jennings	6	2.5	Ind	4	none	none
48BH302	Bighorn	25	4	Ind	28	5 "stone huts" or cairns along edge (n=4) or just outside wheel (n=1)	Ind

Table 14. Summary of Subgroup 7 medicine wheels.

SITE NUMBER	SITE NAME	MAP REFERENCE	PHYSIOGRAPHIC SETTING	TOPOGRAPHIC CLASS	RESEARCH STATUS	SITE CONDITION	PRIMARY REFERENCES
EbOm-1	Many Islands Lake	Fig. 65:1	1.4	7	DMA, Exun	Und	None
EfOo-10	Miner No. 1	Fig. 65:2	1.3	8	DMA, Unex	Dist	ASA site form; Walde 1976; Adams 1976

Table 15. Select metric and non-metric data for Subgroup 7 medicine wheels.

SITE NUMBER	SITE NAME	STONE RING DIAMETER (m)	CENTRAL CAIRN DIA (m)	CAIRN HGT(m)	NO. OF SPOKES	RANGE OF SPOKE LENGTH (m)	ANCILLARY FEATURES INSIDE STONE RING	ANCILLARY FEATURES OUTSIDE STONE RING
EbOm-1	Many Islands Lake	12	2.5	20 cm	6	18-135	None	stone circles (n=20+), stone cairns (n=4+), stone lines (n=2)
EfOo-10	Miner No. 1	15	6	Ind	22	0.5-27.6	cairns (n=2), doorway openings (n=2) in ring wall, cairn (n=1) incorporated in ring wall	terminal stone, cairns (n=7), possible turtle effigy 38 m north, stone circles (n=20)

Table 16. Summary of Subgroup 8 medicine wheels.

SITE NUMBER	SITE NAME	MAP REFERENCE	PHYSIOGRAPHIC SETTING	TOPOGRAPHIC CLASS	RESEARCH STATUS	SITE CONDITION	PRIMARY REFERENCES
DgMn-3	Oxbow West	Fig. 68:1	8.2	8	SMA, DMA	Dist	SMNH site form
DkMq-2	Moose Mountain	Fig. 68:2	2.3	7	DMA, Expub	Und	Kehoe & Kehoe 1979; Eddy 1977a; Wilson 1981; Kehoe & Kehoe 1977; Ovenden & Rodgers 1981

Table 17. Select metric and non-metric data for Subgroup 8 medicine wheels.

SITE NUMBER	SITE NAME	STONE RING DIAMETER (m)	CENTRAL DIA (m)	CAIRN HGT(m)	NO. OF SPOKES	RANGE OF SPOKE LENGTH (m)	ANCILLARY FEATURES INSIDE STONE RING	ANCILLARY FEATURES OUTSIDE STONE RING
DgMn-3	Oxbow West	10	1	Ind	7	15-75	doorway gap	terminal stone cairn (n=1), number of other unspecified features
DkMg-2	Moose Mountain	17x25	10	1	5	13-30	1 cairn, short rays of stone project from it	terminal stone cairns (n=5), cairns (n=3)

1. Final Report of the 1983 Season at Head-Smashed-In Buffalo Jump, Alberta. By Jack Brink, Milt Wright, Bob Dawe and Doug Glaum. 373 pp. 1985.

2. FjPi-29, A Prehistoric Workshop Site in the Alberta Parklands. By Barry Newton and John W. Pollock. 119 pp. 1985. (Bound with Nos. 3 and 4)

3. Archaeological Excavation at the Strathcona Science Park Site (FjPi-29). By Heinz Pyszczyk. 222 pp. 1985. (Bound with Nos. 2 and 4)

4. The Results of Mitigative Excavations During the Fall of 1979. Strathcona Science Park Archaeological Site (FjPi-29). By John W. Ives. 108 pp. 1985. (Bound with Nos. 2 and 3)

5. A Spatial Analysis of Artifact Distribution on a Boreal Forest Archaeological Site. By John W. Ives. 167 pp. 1985.

6. The Archaeology of the Victoria Post, 1864-1897. By Michael R.A. Forsman. 225 pp. 1985.

7. Hawkwood Site (EgPm-179): A Multi-component Prehistoric Campsite on Nose Hill. By Stan Van Dyke and Sally Stewart. 224 pp. 1985.

8. Blackfoot Ethnography. By Kenneth E. Kidd. 217 pp. 1986.

9. Final Report of the 1984 Season at Head-Smashed-In Buffalo Jump, Alberta. By J. Brink, M. Wright, B. Dawe and D. Glaum. 445 pp. 1986.

10. Ross Glen: A Besant Stone Circle Site in Southeastern Alberta. By J. Michael Quigg. 208 pp. 1986.

11. A Selected Bibliography of Historic Artifacts: c. 1760-1920. By Mary Margaret Smith and Heinz Pyszczyk. 325 pp. 1988.

12. Medicine Wheels on the Northern Plains: A Summary and Appraisal. By John H. Brumley. 126 pp. 1988.

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